# PXL System User Manual

Revised 10/19/2010

BARCO

Visibly yours

# Table of Contents


**1 Online Help System 1**

**2 2. C-series Tile Manual 3**

2.1 Safety & Installation Guidlines 4
2.2 System Overview 7
2.2.1 Basic System Info 8
2.2.2 C-series Tile Overview 9
2.3 Power & Data Distribution 10
2.3.1 Power & Data Overview 11
2.3.2 Power Input 13
2.3.3 Data Input 15
2.3.4 Tile Status Indicator 16
2.3.5 Cables & Connectors 17
2.4 Assembly & Mounting 20
2.4.1 Latches 21
2.4.2 Latch Adjustment 23
2.4.3 Angle Adjustment Dowels 24
2.4.4 Center Mount 26
2.4.5 L-Bracket 27
2.5 Rigging Hardware & Methods 30
2.5.1 Stacked C-series Tiles 33
2.5.1.1 Feet 35
2.5.1.2 Vertical Braces 37
2.5.1.3 Assembly of Stacked Screens 38
2.5.1.4 Wind Speed Charts 40
2.5.2 Light Duty Hanging 42
2.5.2.1 Light Duty Header Detail 44
2.5.2.2 Light Duty Header Operation 45
2.5.2.3 Adjusting the Hooks on a Light Duty Header 49
2.5.2.4 Light Duty Hanging Options 50
2.5.2.5 Example: Multiple Light Duty Headers 52
2.5.2.6 Load Charts: Multiple Light Duty Headers 53
Left = 1x, Right = 1x 54
Left = 1x, Right = 2x 55
Left = 1x, Right = 3x 56
Left = 1x, Right = 4x 57
Left = 2x, Right = 1x 58
Left = 2x, Right = 2x 59
Left = 2x, Right = 3x 60
Left = 2x, Right = 4x 61
Left = 3x, Right = 1x 62
Left = 3x, Right = 2x 63
Left = 3x, Right = 3x 64
Left = 3x, Right = 4x 65
Left = 4x, Right = 1x 66
Left = 4x, Right = 2x 67
Left = 4x, Right = 3x 68
Left = 4x, Right = 4x 69
2.5.2.7 Cantilever Hanging 70

2.5.2.8 Light Duty Header Wind Speed Charts 72
2.5.3 Heavy Duty Hanging 74
2.5.3.1 Heavy Duty Header Detail 76
2.5.3.2 Heavy Duty Header Operation 77
2.5.3.3 Load Charts: Heavy Duty Headers 78
Heavy Duty Header Load Chart - 2 Pickup Points 80
Heavy Duty Header Load Chart - 3 Pickup Points 82
Heavy Duty Header Load Chart - 4 Pickup Points 84
Heavy Duty Header Load Chart - 5 Pickup Points 85
Heavy Duty Header Load Chart - 6 Pickup Points 86
2.6 C-series Tile Appendices 87
Appendix A: Beaufort Scale 88

**3 3. Helix P1 Manual 89**
3.1 Safety & Installation Guidelines 90
3.2 Helix System Overview 92
3.2.1 Basic System Info 93
3.2.2 Helix P1 Pixel String Overview 94
3.2.3 PXL Node Box Overview 95
3.3 Power & Data Distribution 96
3.3.1 Power & Data Overivew 97
3.3.2 Power Input 98
3.3.3 PXL Node Status Indicator 99
3.3.4 PXL Cable & Connectors 100
3.3.5 Pixel Extension Cables 103
3.4 Helix P1 Assembly & Mounting 104

**4 4. Vizomo User Guide 106**
4.1 Vizomo Quick Start 107
4.1.1 Installing Vizomo Controller 108
4.1.2 Connecting to a Processor 109
4.1.3 Upgrading Vizomo 111
4.1.4 Mapping 112
4.2 General Overview 113
4.2.1 Key Features 114
4.2.2 Safety Information 115
4.2.3 Hardware Overview 116
4.2.4 Power Up 118
4.3 Configuration 119
4.3.1 Vizomo Controller 120
4.3.1.1 Installation 121
4.3.1.2 Operation 122
4.3.1.3 Navigation Bar 124
4.3.2 System Settings 125
4.4 Operation 126
4.4.1 Blueprint Chooser 127
4.4.2 DVI Capture 128
4.4.3 Video Mixer 129
4.5 Vizomo Appendices 133
Appendix A: Specifications 134
Appendix B: Video File Encoding 136

**5 5. PDB-5 Manual 139**
5.1 Safety & Installation Guidelines 140

5.2 System Overview 141
5.2.1 Basic System Info 142
5.2.2 PDB-5 Overview 143
5.2.3 Status Indicators 144
5.3 Operation 145
5.3.1 General Operation 146
5.3.2 Power Input & Output 147
5.3.3 Data Input 149

**6 6. RasterMAPPER User Guide 150**
6.1 RasterMAPPER QuickStart 151
6.1.1 Enumeration 154
6.1.2 Calibration 157
6.2 Basic Workflow 159
6.3 UI Overview 160
6.3.1 Menu Bar 163
6.3.2 Mode Selection 164
6.3.3 Map Editing 165
6.3.4 Inspectors 168
6.4 Software Updates 169
6.5 Mapping 170
6.5.1 Canvas 171
6.5.2 Mapping Inspectors 173
6.5.3 Sequencing 177
6.5.4 Map Save/Open 178
6.5.5 Advanced Fixture Options 179
6.6 Processor Control 182
6.6.1 Processor List 183
6.6.2 Setup Inspectors 185
6.7 RasterMAPPER Notes 189

**7 7. PXL System Online Help Notes 190**

**8 Site Index 192**

# Online Help System

revised 10/19/2010 8:02:57 PM

Welcome to the online help system. Browse through the help pages by selecting pages in the table of contents. To quickly find specific product information, enter search criteria in the search box above and click the search button.

## Version 4.2.2 Changes:

C-series / Helix Firmware:

- No changes

Vizomo:

- PXL timing improvements for 'choppy' tiles

RasterMAPPER:

- New C-series Display tool pops up when RM is opened
- Disable status indicators on the back of C-series tiles
- 14 new test patterns
- Separate brightness values for C11 and C8v
- Pixel quantities for C8v now reported correctly

## Version 4.2.1 Changes:

C-series / Helix Firmware:

- No changes

Vizomo:

- Increased pixel capacity

RasterMAPPER:

- Fixed IE script error
- Mapping for P1 fixed
- Show correct release notes in auto update mechanism

## Version 4.2.0 Changes:

C-series / Helix Firmware:

- C-series 'On Screen Enumeration', sequence numbers are now displayed during enumeration.
- Improved PXL error handling.

Vizomo:

- New Video Mixer blueprint.
- Implemented new capture devices to support HD-SDI and DVI over HDMI.
- DVI monitor now warns if the system is in 'Blackout'.
- Improved the way Vizomo interacts with the PXL network.

- Improved logs and reports for trouble shooting.
- Support for placing C11 and C8v in the same map.

RasterMAPPER:

- Adjusted interface elements to aid workflow.
- Numerous bug fixes.
- Numerous 'behind the scenes' components to support future features.

## See also

2. C-series Tile Manual
3. Helix P1 Manual
4. Vizomo User Guide
5. PDB-5 Manual
6. RasterMAPPER User Guide
7. PXL System Online Help Notes
Site Index

# 2. C-series Tile Manual

2.1 Safety & Installation Guidlines
2.2 System Overview
2.3 Power & Data Distribution
2.4 Assembly & Mounting
2.5 Rigging Hardware & Methods
2.6 C-series Tile Appendices

## See also

Online Help System
3. Helix P1 Manual
4. Vizomo User Guide
5. PDB-5 Manual
6. RasterMAPPER User Guide
7. PXL System Online Help Notes
Site Index

# 2.1 Safety & Installation Guidlines

WARNING

Read the installation instructions before connecting the system to the power source.
Attention: Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.
Warnung: Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

WARNING

The panels shall be mounted 15-20 meter from the viewing place, depending on the configuration.
Lamp may pose a hazard even for momentary or brief exposure. Remove power before servicing. No servicing or maintenance with power to the LEDs switched on.
A warning label shall be added to the tile and in the manual stating the risk and how to avoid the risk.

## Safety Guidelines for Human Eyes

WARNING

Use caution when viewing LEDs directly if driven at high current, which may greatly increase the hazard to your eyes. (IEC62471)

## Rigging & Mounting Guidelines

- C-series tiles have an IP66 rating and are suitable for use in most indoor and outdoor installations except where water immersion could occur. This conforms to the International Electrotechnical Commission (IEC) standard 60529.
- Use caution when installing the display. C-series tiles weigh 6.4 kg (14.1 lbs)/tile.
- Ensure rigging hardware is able to handle the weight of the entire C-series system with appropriate safety factors.
- External rigging hardware must be properly installed prior to hanging C-series tiles.
- Do not hang more than 25 C-series tiles (10 m) tall with the integral rigging hardware.
- When using light duty headers, refer to Chapter 5, Light Duty Rigging Info (p. 28), Chapter 6, Heavy Duty Rigging Info (p. 48) to calculate the maximum number of panels that can be hung vertically.
- Barco supplies a variety of stacking and hanging accessories for screens up to 25 tiles (10 m) tall. Displays >10 m tall require an auxiliary frame system not supplied by Barco.
- Handle is intended for carrying a single tile only. Do not use for safety, tie-off, climbing, or lifting.

## Power & Data Guidelines

DANGER

Risk of electrical shock. No user-serviceable parts inside.
Observe all applicable electrical codes.
The power outlet shall be installed near the equipment and shall be easily accessible.
Do not hot plug any cables. Damage to the connector pins may occur. Resulting damage is not covered under warranty.

## Power

Observe the following power guidelines when setting up your C-series display.

The tables below indicate maximum power consumption.

C11
Max Power = 85 watts (@5,000 nits, full white)

| Voltage | Amperage per Tile | Amperage per 16 Tiles | Max Panels per PDB-5[2] w/ 1 x 16A input | Max Panels per PDB-5[2] w/ 2 x 16A input |
|---|---|---|---|---|
| 240VAC | 0.35 | 5.7 | 45 | 90 |
| 220VAC | 0.39 | 6.2 | 41 | 83 |
| 208VAC | 0.41 | 6.5 | 39 | 78 |
| 200VAC | 0.42 | 6.8 | 38 | 75 |

1. PDB-5 has 32A limit (2x 16A).
2. Maximum C-series C11 panels per PDB-5 Port is 16.

C8v
Max Power = 55 watts (@8,000 nits, full white)

| Voltage | Amperage per Tile | Amperage per 25 Tiles | Max Panels per PDB-5[2] w/ 1 x 16A input | Max Panels per PDB-5[2] w/ 2 x 16A input |
|---|---|---|---|---|
| 240VAC | 0.23 | 5.7 | 70 | 140 |
| 220VAC | 0.25 | 6.3 | 64 | 128 |
| 208VAC | 0.26 | 6.6 | 61 | 122 |
| 200VAC | 0.28 | 6.9 | 58 | 116 |

1. PDB-5 has 32A limit (2x 16A).
2. Maximum C8v panels per PDB-5 Port is 25.

When running typical video content, the duty cycle (average power consumption) is about 30% of maximum.

**NOTE**
For installations where a residual current device (RCD) or similar device will be used on the mains power to the display, please take into account that C-series tiles have an earth leakage of 85 micro-amps per tile.

## Data

Observe the following data limits when setting up your C-series display.

| Fixture | Max panels per PDB-5 output |
|---|---|
| C11 | 16 |
| C8v | 25 |

## Temperature

C-series installations must take into account the operating temperature of the tiles. The ambient operating temperature for a C-series tile is -20°C to 45°C.

**NOTE**
C-series tiles have an internal temperature sensor that shuts down the tile's output (brightness is set to 0) when internal temperature is too high. The brightness will return to normal when the internal temperature has cooled sufficiently.

## See also

2.2 System Overview
2.3 Power & Data Distribution
2.4 Assembly & Mounting
2.5 Rigging Hardware & Methods

2.6 C-series Tile Appendices

# 2.2 System Overview

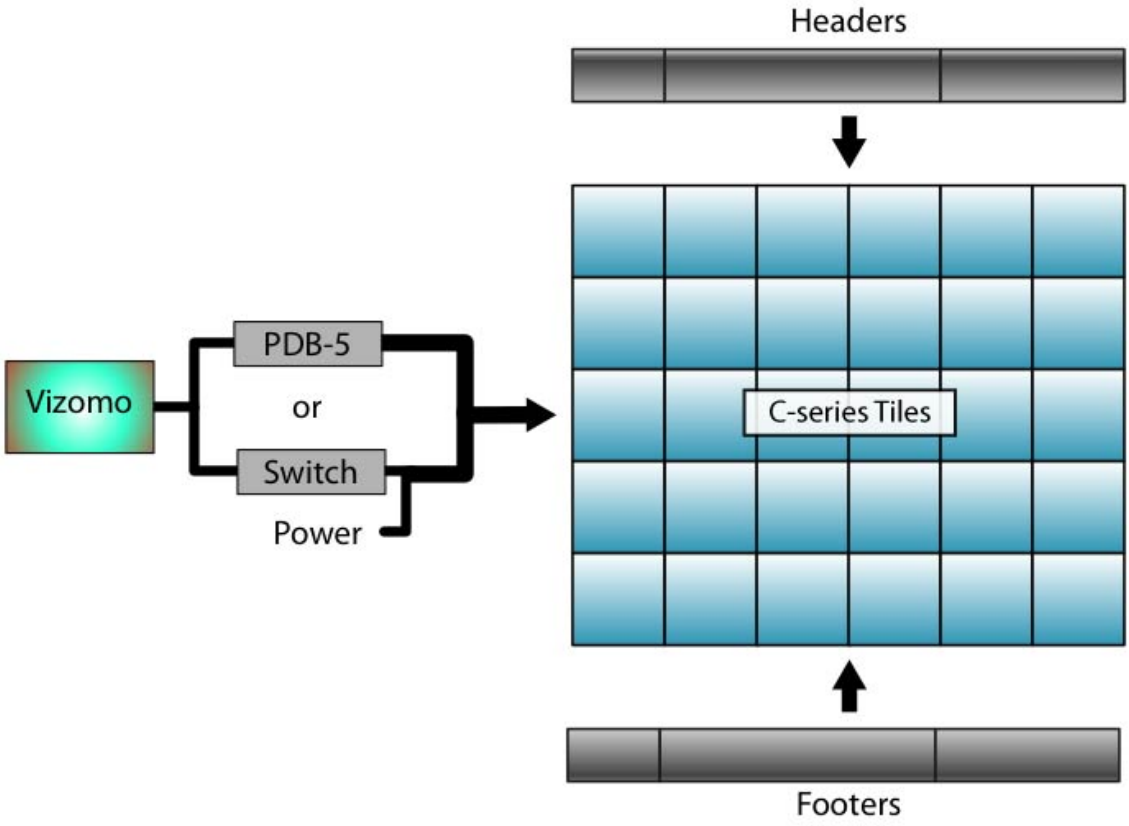
2.2.1 Basic System Info
2.2.2 C-series Tile Overview

## See also

2.1 Safety & Installation Guidlines
2.3 Power & Data Distribution
2.4 Assembly & Mounting
2.5 Rigging Hardware & Methods
2.6 C-series Tile Appendices

# 2.2.1 Basic System Info

The diagram below provides an overview of the C-series system.




C-series tiles are available in either an 11 mm (C11) or 8 mm virtual (C8v) pitch.

C-series tiles are installed using headers or footers. Section 2.4 Assembly & Mounting and section 2.5 Rigging Hardware & Methods provide detailed information.

The Vizomo processor provides video signal to the PDB-5 which combines the video data along with AC power and sends it to the C-series tiles on one cable. Instead of a PDB-5, an Ethernet switch and break-in cables can be used.

Detailed information on power and data distribution is provided in section 2.3 Power & Data Distribution. More information on the PDB-5 can be found in the PDB-5 Manual.

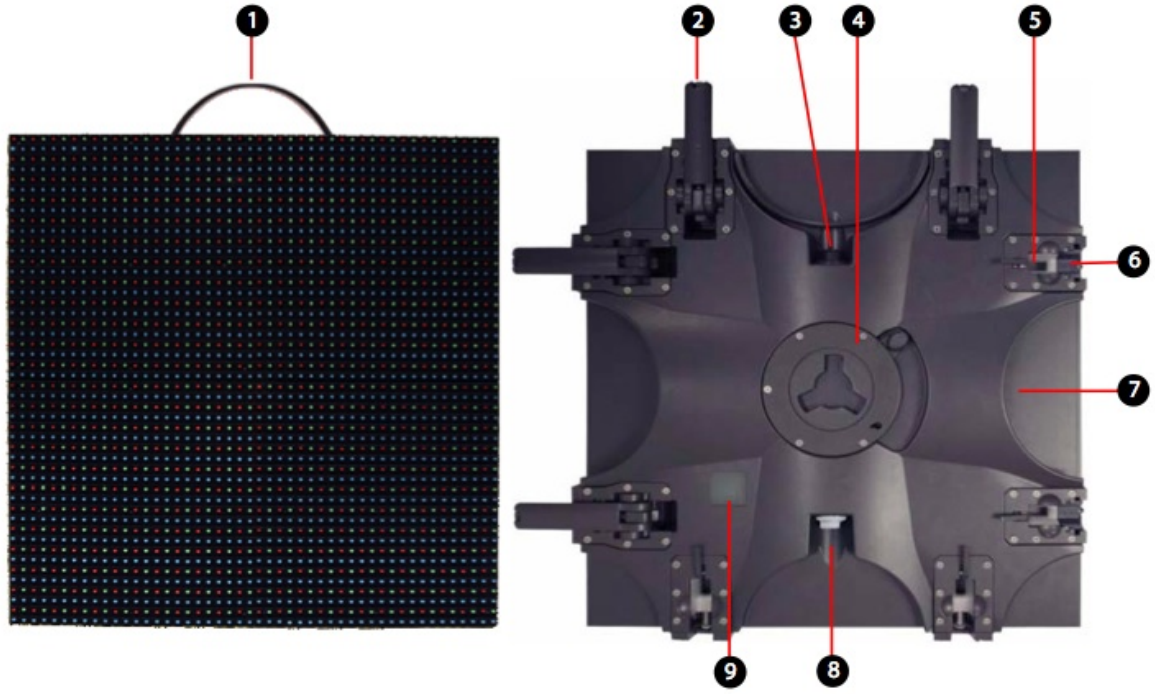
For information on the Vizomo processor, consult the Vizomo User Guide.

## See also

2.2.2 C-series Tile Overview

# 2.2.2 C-series Tile Overview

The C-series tile contains the rigging hardware necessary for temporary hanging or stacking.




1 Carrying Handle. Folds away when not in use.
2 Latch Hook and lever for locking multiple C-series tiles together.
3 Power & Data Input Combined AC power & data input via black PXL Cable connector.
4 Center Mount Mounting socket with rotary latch.
5 Latch Catch Socket that accepts the latch hook for locking multiple tiles together.
6 Angle Adjustment Dowel. Interchangeable pin available in differing angles (±5 degrees) to enable horizontally curved installations.
7 Breather Valve. Allows air to breath through waterproof, gas-permeable membrane. One valve on each side of tile. Voids warranty if altered or removed.
8 Power & Data Output Combined AC power & data output via white PXL Cable connector.
9 System Info Indicator. Indicates system status regarding power and data.

## See also

2.2.1 Basic System Info

# 2.3 Power & Data Distribution

2.3.1 Power & Data Overview
2.3.2 Power Input
2.3.3 Data Input
2.3.4 Tile Status Indicator
2.3.5 Cables & Connectors

## See also

2.1 Safety & Installation Guidlines
2.2 System Overview
2.4 Assembly & Mounting
2.5 Rigging Hardware & Methods
2.6 C-series Tile Appendices

# 2.3.1 Power & Data Overview

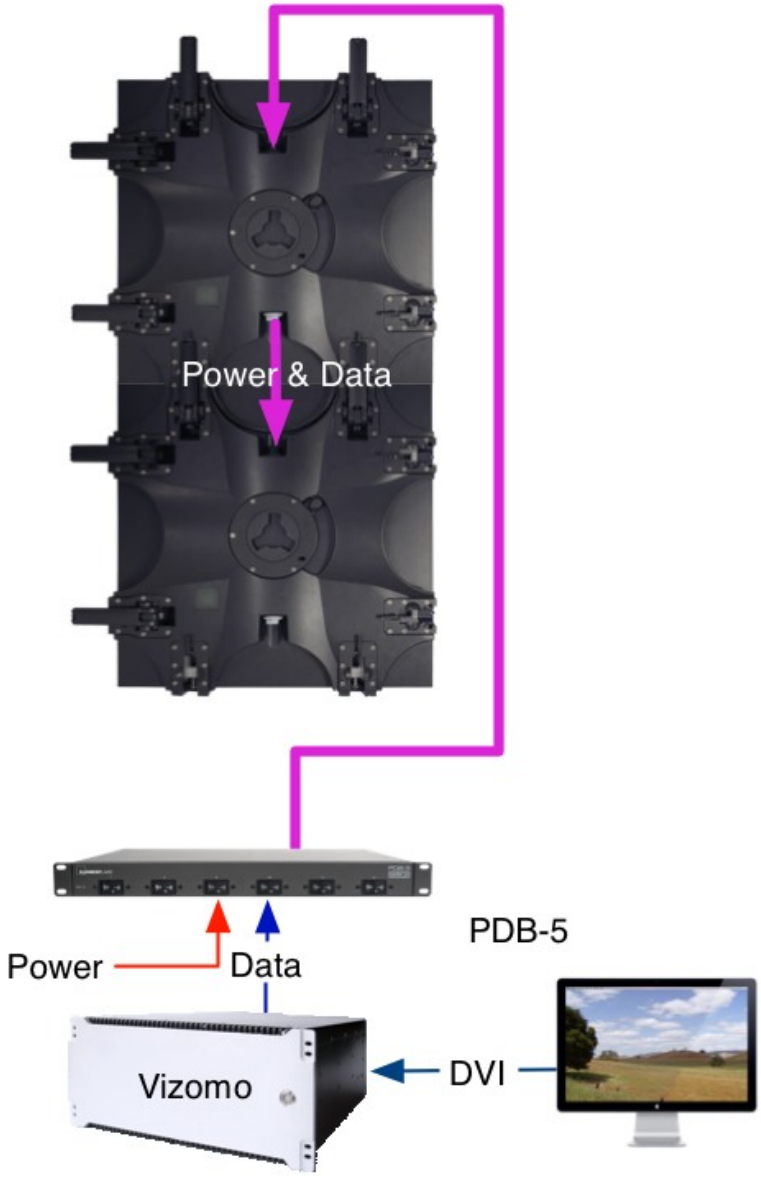
The PDB-5 handles power and data distribution for C-series tile systems. All power & data cabling between the PDB-5 and C-series tiles is done through integrated cabling with color-coded male or female connectors.

Alternative installations without a PDB-5 can make use of the PXL break-in cable which accepts AC power and Ethernet data connections (PXL Break-In Cable (p/n 350-0660).

Connectors on the back of a tile are color-coded as follows:

- Black Connector = Power & Data In
- White Connector = Power & Data Out

When interconnecting C-series tiles, always attach the black connector to the black jack and the white connector to the white jack.

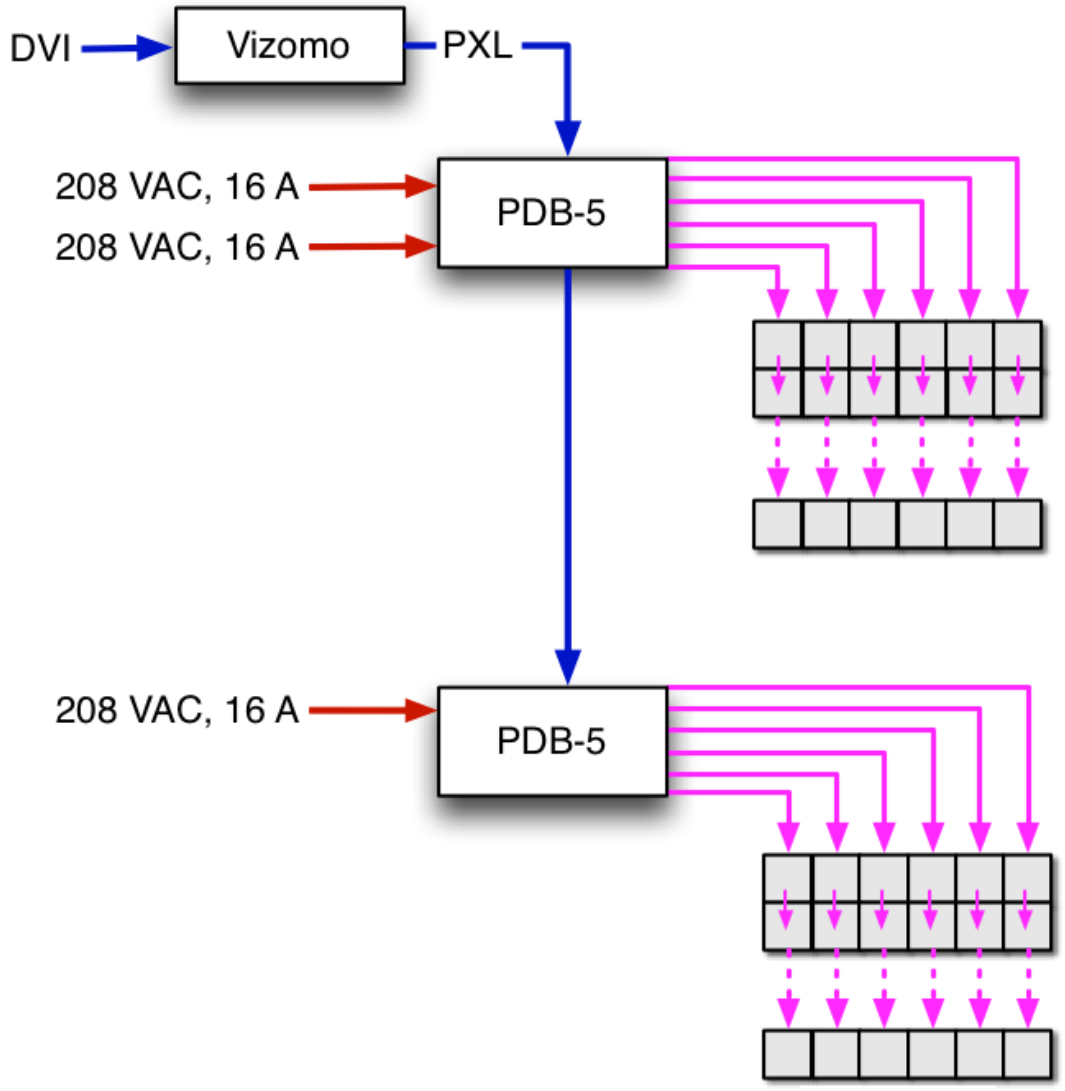



**See also**

2.3.2 Power Input
2.3.3 Data Input
2.3.4 Tile Status Indicator
2.3.5 Cables & Connectors

# 2.3.2 Power Input

Each PDB-5 has 2x 16 amp inputs and 6x 10 amp outputs with breakers for AC power distribution.
The limit for each PDB-5 output is 10A, with a total output of 32A maximum per PDB-5.
The maximum number of C-series tiles per PDB-5 port is 25. Refer to the PDB-5 Manual for more information.




WARNING - Do not hot plug any cables. Damage to the connector pins may occur. Resulting damage is not covered under warranty.

Observe the following power guidelines when setting up your C-series display. The tables below indicate maximum power consumption.

C11
Max Power = 85 watts (@5,000 nits, full white)

| Voltage | Amperage per Tile | Amperage per 16 Tiles | Max Panels per PDB-5[2] w/ 1 x 16A input | Max Panels per PDB-5[2] w/ 2 x 16A input |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 240VAC | 0.35 | 5.7 | 45 | 90 |
| 220VAC | 0.39 | 6.2 | 41 | 83 |
| 208VAC | 0.41 | 6.5 | 39 | 78 |
| 200VAC | 0.42 | 6.8 | 38 | 75 |

1. PDB-5 has 32A limit (2x 16A).
2. Maximum C11 panels per PDB-5 Port is 16.

C8v
Max Power = 55 watts (@8,000 nits, full white)

| Voltage | Amperage per Tile | Amperage per 25 Tiles | Max Panels per PDB-5[2] w/ 1 x 16A input | Max Panels per PDB-5[2] w/ 2 x 16A input |
|---|---|---|---|---|
| 240VAC | 0.23 | 5.7 | 70 | 140 |
| 220VAC | 0.25 | 6.3 | 64 | 128 |
| 208VAC | 0.26 | 6.6 | 61 | 122 |
| 200VAC | 0.28 | 6.9 | 58 | 116 |

1. PDB-5 has 32A limit (2x 16A).
2. Maximum C8v panels per PDB-5 Port is 25.

When running typical video content, the duty cycle (average power consumption) is about 30% of maximum.

## See also

2.3.1 Power & Data Overview
2.3.3 Data Input
2.3.4 Tile Status Indicator
2.3.5 Cables & Connectors

# 2.3.3 Data Input

C-series tiles are designed to work exclusively with the Vizomo processor. Connect the User Ethernet port on the back of the Vizomo to the PXL input on the back of the PDB-5 with a CAT 5e patch cable. Then connect the appropriate PDB-5 power/data output (1-6) to the C-series tile input connector.

Observe the following data limits when setting up your C-series display.

| Fixture | Max panels per PDB-5 output |
|---|---|
| C11 | 16 |
| C8v | 25 |

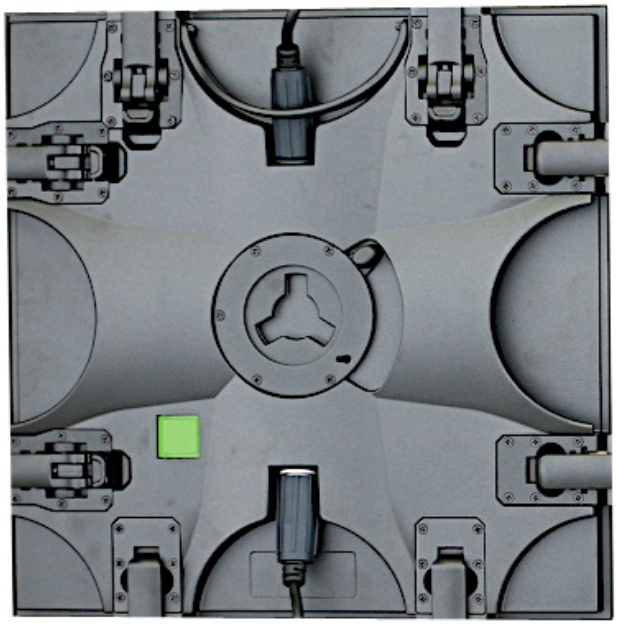
**NOTE**
When first powered on, the PDB-5 will take several minutes to fully boot and configure.

## See also

2.3.1 Power & Data Overview
2.3.2 Power Input
2.3.4 Tile Status Indicator
2.3.5 Cables & Connectors

# 2.3.4 Tile Status Indicator

The colored status indicator located on the back of the C-series tile allows you to instantly determine the state of each tile.



| | | |
|---|---|---|
| | Off | No Power (Note: the status indicator remains black for a few seconds when the tile is first powered on) |
| | White | Tile is powering up |
| | Magenta | Tile has booted, but not yet receiving data |
| | Orange | Top or bottom data link is working properly |
| | Blue | Both data links are working properly |
| | Green | Video data is being received |
| | Flashing Red | Error |

## See also

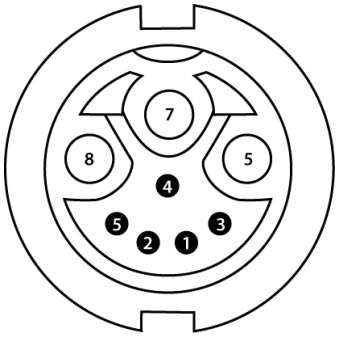
2.3.1 Power & Data Overview
2.3.2 Power Input
2.3.3 Data Input
2.3.5 Cables & Connectors

# 2.3.5 Cables & Connectors

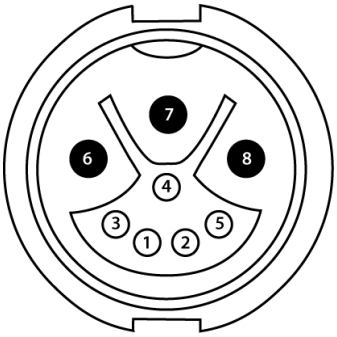
## PXL Cable Pinouts

The following is the pinout information for the combined power and data cabling used in the PXL system. The gender of the connector is determined by the power pins (the 3 largest pins).

Male Power / Data Cable - connects to an upstream source (PDB-5, upstream tile):



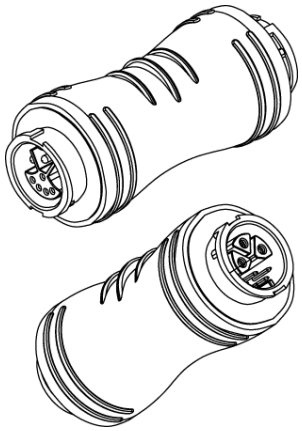

Female Power / Data Cable - connects to a downstream sink (tile):



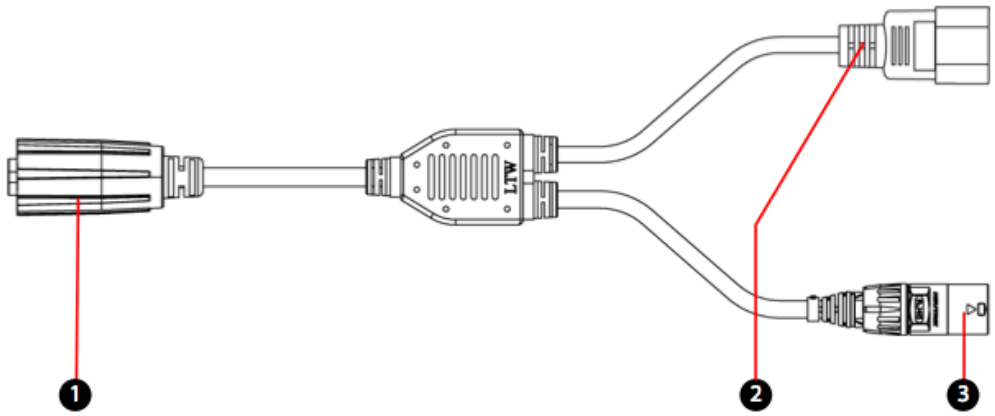

| PIN | INTERNAL WIRE COLOR | FUNCTION |
|---|---|---|
| 1 | Orange / White | Data TX+ |
| 2 | Blue / White | Data RX+ |
| 3 | Orange | Data TX- |
| 4 | Shield | Drain |
| 5 | Blue | Data RX- |
| 6 | Brown | AC Power - Phase |
| 7 | Green / Yellow | AC Power - Earth Ground |
| 8 | Blue | AC Power - Neutral |

## PXL Cable Couplers

Male - Female Coupler (p/n 656-0500)
The male-female coupler can be used to extend the length of a PXL cable.

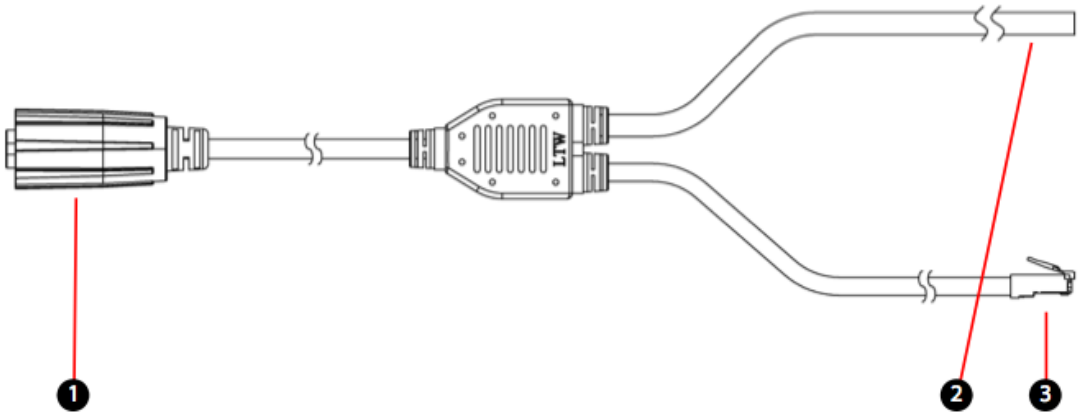


## Break-In Cable - Standard (p/n 350-0660)



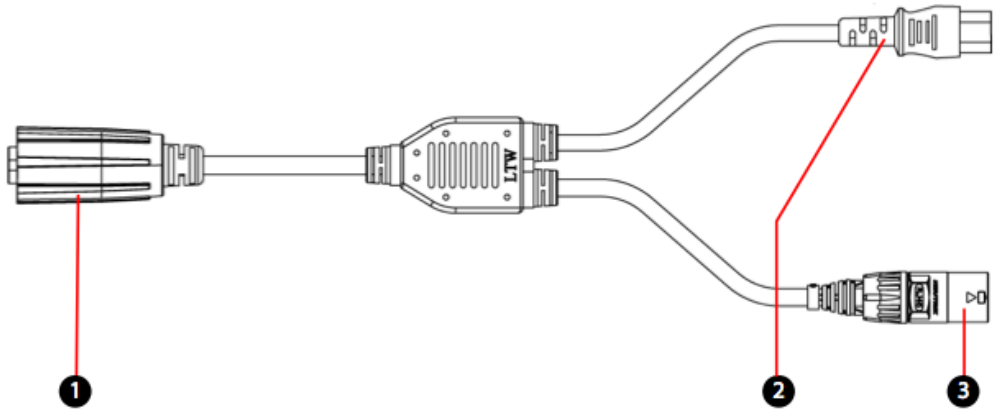

1 Power and Data Output (female) - Combined power and data via proprietary PXL Cable connector.
2 Power Input - AC power input via IEC C14 (male) connector.
3 Data Input - PXL data input via Neutrik EtherCon (RJ45) connector.

## Break-In Cable - long - hard wire (p/n 350-0663)



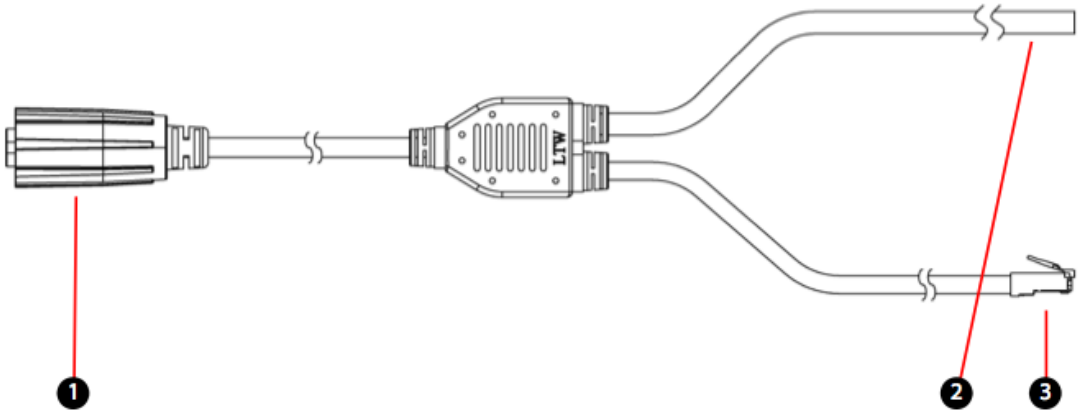

1 Power and Data Output (female) - Combined power and data via proprietary PXL Cable connector.
2 Power Input - Unterminated AC power harness to be hardwired in fixed installations.
3 Data Input - PXL data input via Ethernet (RJ45) connector.

## Break-Out Cable - Standard (p/n 350-0675)




1 Power and Data Input (Male) - Combined power and data via proprietary PXL Cable connector.
2 Power Output - AC power input via IEC C13 (female) connector.
3 Data Output - PXL data output via Neutrik EtherCon (RJ45) connector.

## Break-Out Cable - long - hard wire (p/n 350-0678)




1 Power and Data Input (Male) - Combined power and data via proprietary PXL Cable connector.
2 Power Output - AC power input via IEC female connector.
3 Data Output - PXL data output via Neutrik EtherCon (RJ45) connector.

## See also

2.3.1 Power & Data Overview
2.3.2 Power Input
2.3.3 Data Input
2.3.4 Tile Status Indicator

# 2.4 Assembly & Mounting

2.4.1 Latches
2.4.2 Latch Adjustment
2.4.3 Angle Adjustment Dowels
2.4.4 Center Mount
2.4.5 L-Bracket

WARNING

Do not hang more than 25 panels (10 m) tall with the integral rigging hardware.
No lifting point should support more than 100 tiles (1433 lb / 650 kg).
When using light duty headers, refer to Appendix 5, Light Duty Rigging Info to calculate the maximum number of panels.
Displays >10 m tall require an auxiliary frame system not supplied by Barco.
Failure to equalize the load among all pickup points could result in serious injury.

## See also

2.1 Safety & Installation Guidlines
2.2 System Overview
2.3 Power & Data Distribution
2.5 Rigging Hardware & Methods
2.6 C-series Tile Appendices

# 2.4.1 Latches

There are a total of 8 integrated locking components on each tile as shown below; 4 latches and 4 catches.

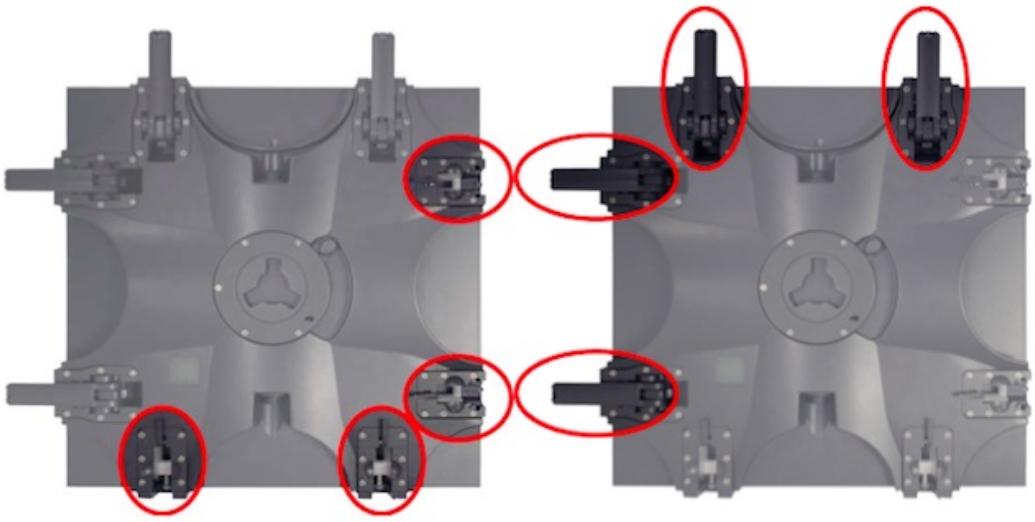
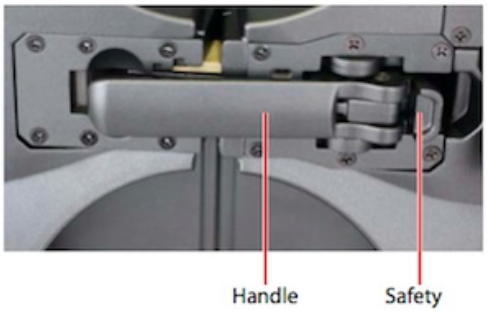
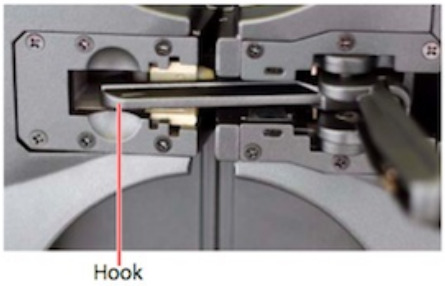
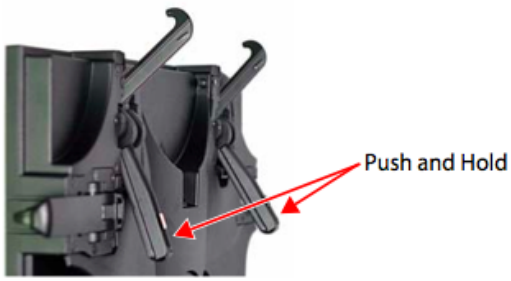


**Figure 4.1** Cobra Latch




The photo below illustrates the optimal position of the handle and hook to allow for easy connection to other tiles.
With the hook in this position and your thumbs slightly pushing on the open handle, you can hang one tile on another, then lock the tiles together.




## How to Lock C-series Tiles Together

Start with the latch fully open. Align the C-series tiles so the latch of one aligns with the catch of the other.

Place the latch hook in the catch. Ensure sure the hook is fully seated.

Push the handle towards the catch.

Ensure the hook is fully locked in the catch and that the safety is engaged.

CAUTION
Use light finger pressure when latching the tile. Do not force the lock handle. If resistance is felt as you lock the tiles, open the handle, ensure the hook is fully seated, check for proper alignment, and try again.

## How to Unlock C-series Tiles

Push and hold the safety catch as you begin to pull the handle away from the tile.

Continue pulling the handle open.

Ensure the handle is all the way open so the hook is fully disengaged from the catch.

CAUTION
When mounting C-series units together, ensure the latches are fully engaged in the catch and lock in place before releasing the C-series tile from your grip.

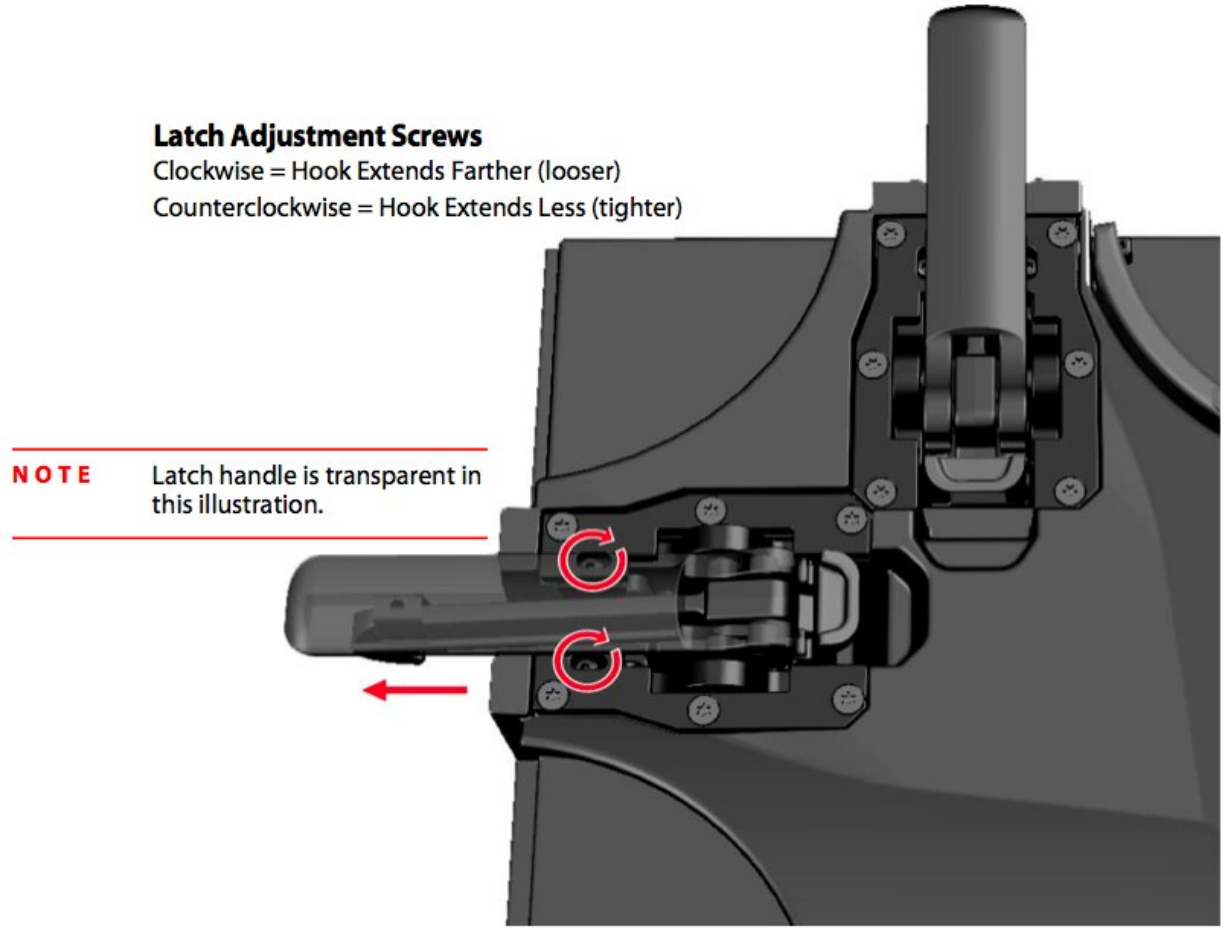
## See also

2.4.2 Latch Adjustment
2.4.3 Angle Adjustment Dowels
2.4.4 Center Mount
2.4.5 L-Bracket

# 2.4.2 Latch Adjustment

The latches on a C-series tile can be adjusted to provide optimal connection between tiles. This adjustment moves the hook closer to or farther from the edge of the adjacent tile.

The adjustment screws are located under the latch handle and require a 2mm hex key.

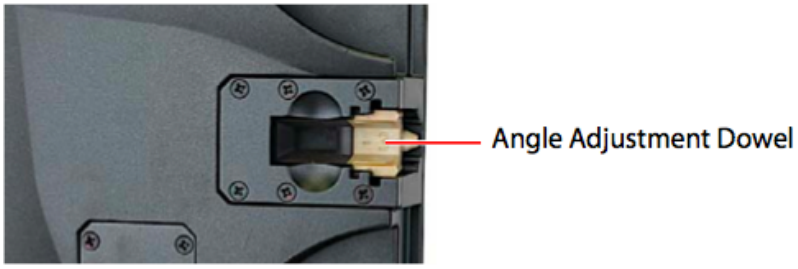

Latch Adjustment Screws
Clockwise = Hook Extends Farther (looser)
Counterclockwise = Hook Extends Less (tighter)
NOTE
Latch handle is transparent in this illustration.

## See also

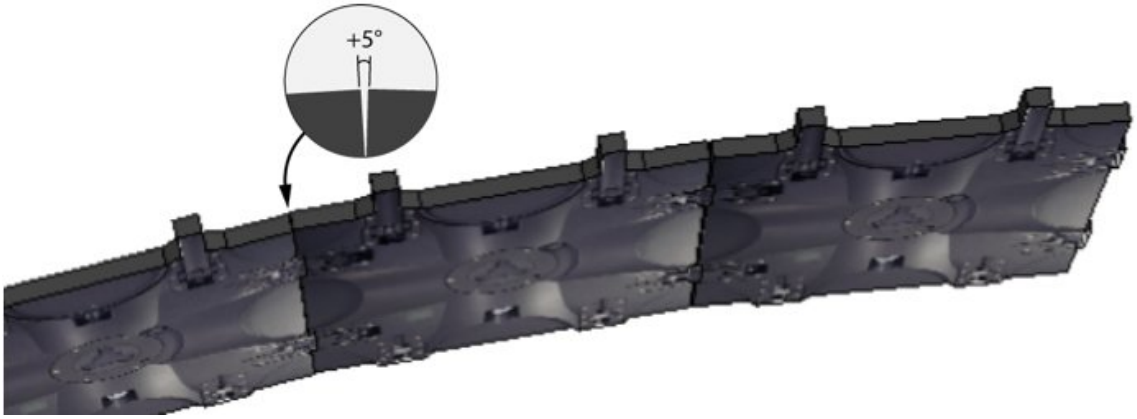
2.4.1 Latches
2.4.3 Angle Adjustment Dowels
2.4.4 Center Mount
2.4.5 L-Bracket

# 2.4.3 Angle Adjustment Dowels

Angle adjustment dowels are used in curved installations. These color-coded spacers are available in various angles to accommodate convex or concave horizontal installations.



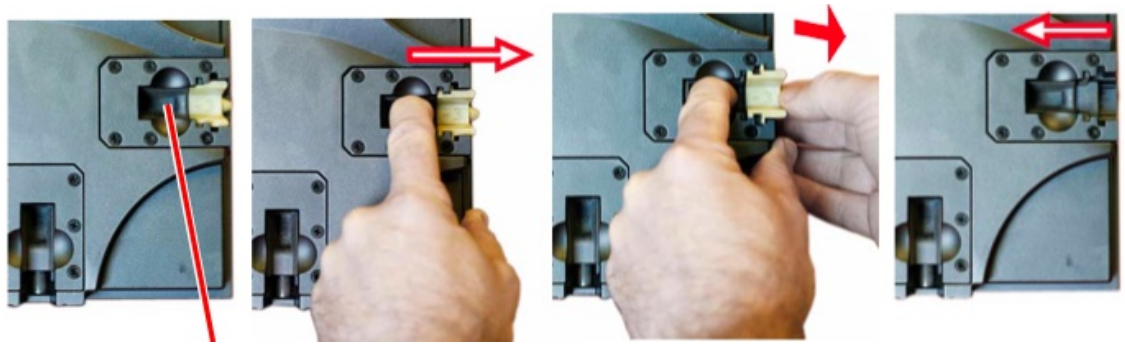

C-series tiles are designed to be curved +/- 5°.




CAUTION

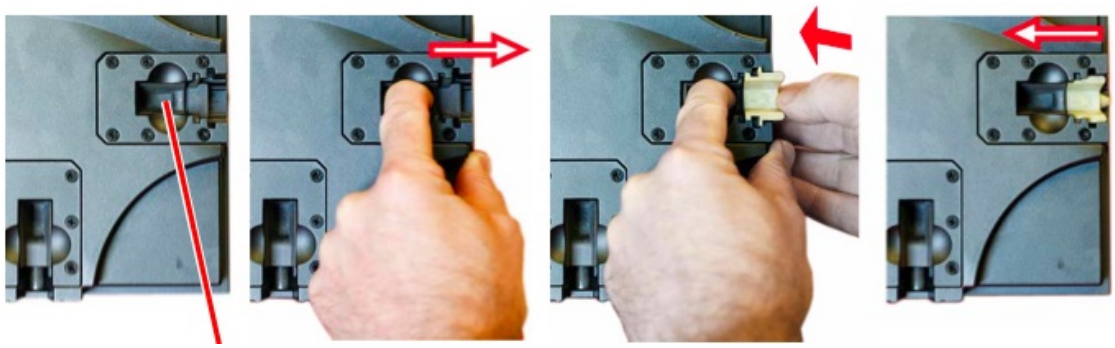
The adjustment dowels are intended for use in horizontally curved installations.
C-series tiles are not designed to be curved vertically.

## How to Remove an Angle Adjustment Dowel



Slide the catch and dowel out until the slots line up to allow the dowel to slide out. Once the dowel is removed, the catch will slide back in place.

## How to Install an Angle Adjustment Dowel



Slide the catch out until the slots line up to allow the dowel to slide into place. Once the dowel is seated correctly, the catch and the dowel will slide back in place.

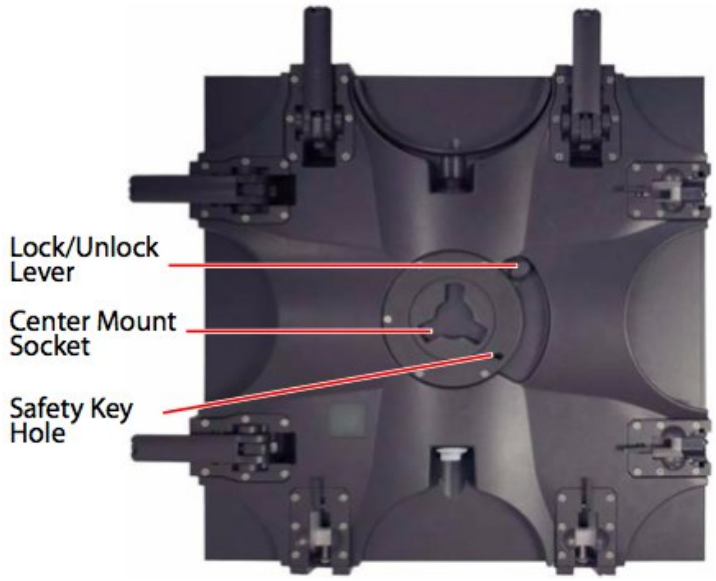
## See also

2.4.1 Latches
2.4.2 Latch Adjustment
2.4.4 Center Mount
2.4.5 L-Bracket

# 2.4.4 Center Mount

## Center Mount Detail

The center mount is used for attachment of vertical braces.




## See also

2.4.1 Latches
2.4.2 Latch Adjustment
2.4.3 Angle Adjustment Dowels
2.4.5 L-Bracket

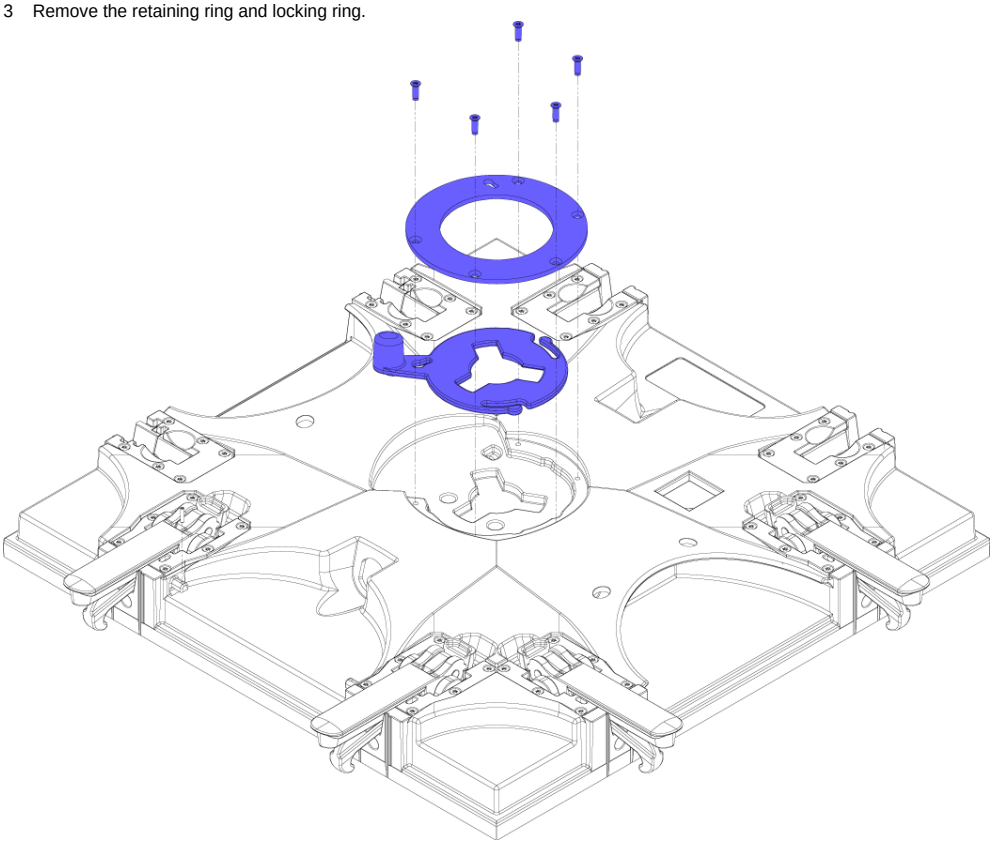
# 2.4.5 L-Bracket

In addition to the Center Mount there are two M10 threaded holes in the back of each C-series tile that may be used for permanent mounting or attaching other accessories.
The two threaded holes are located underneath the Center Mount.

## Removing the Center Mount Socket

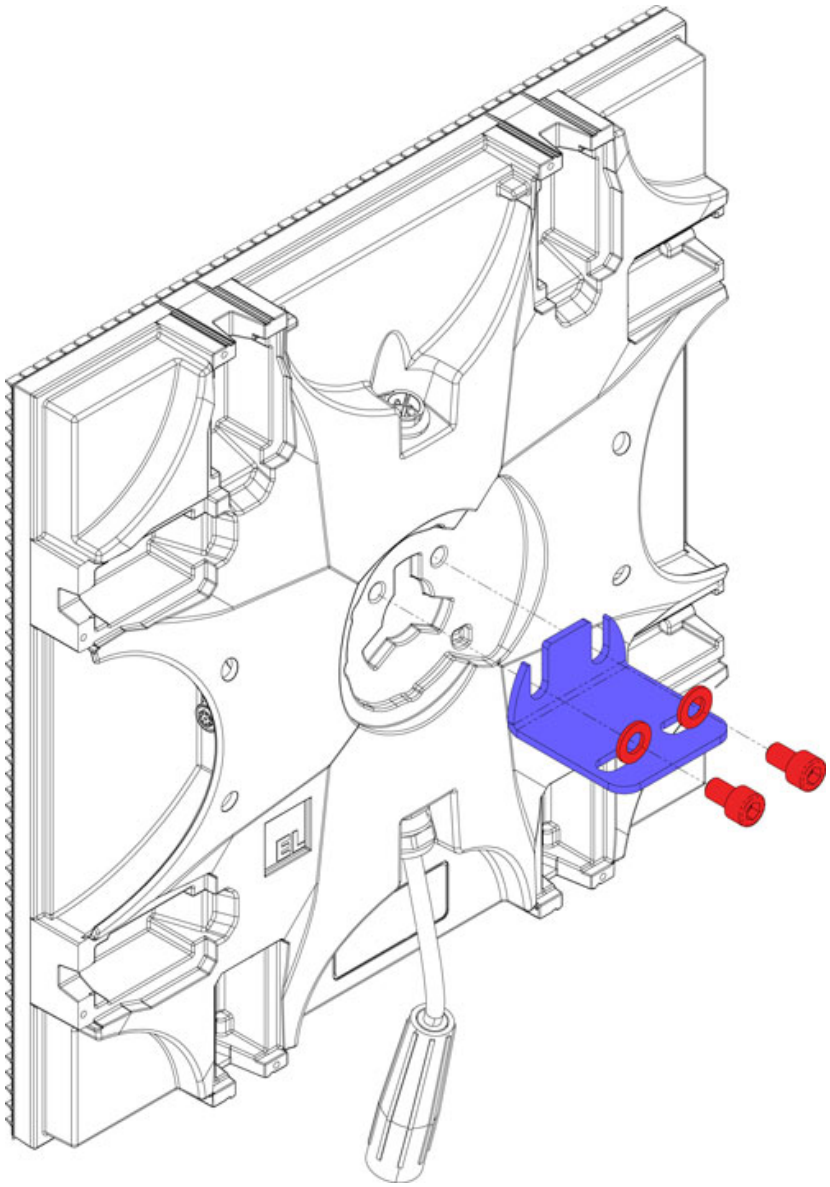
Use of the L-bracket require the removal of the center mount socket from the rear of the tile as described in the following steps.

1 Place the tile on a flat surface, protecting the front of the tile from damage to the LEDs.
2 Remove the 5 screws from the retaining ring.
3 Remove the retaining ring and locking ring.

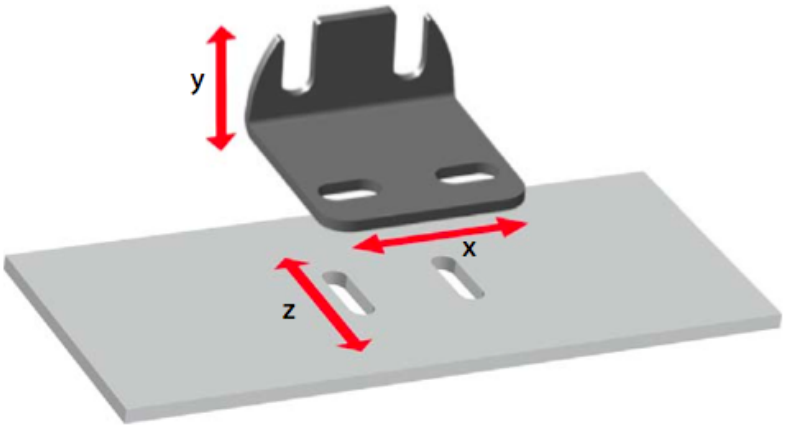


## Installing the L-Bracket

The L-bracket mounts to the back of a C-series tile via 2x M10 threaded inserts.
Use M10-16 (16mm long) bolts only.
The torque specification for this M10-16 bolt is 16.9 N-m.



The L-bracket allows adjustability along the X and Y axis. To allow for Z axis adjustment the holes to which the L-bracket is attached should also be slotted as shown below:



CAUTION

Use M10-16 bolts for the threaded mounting holes on the back of the C-series tile. Longer lengths will cause damage to the tile. Resulting damage is not covered under warranty.

## See also

2.4.1 Latches
2.4.2 Latch Adjustment
2.4.3 Angle Adjustment Dowels
2.4.4 Center Mount

# 2.5 Rigging Hardware & Methods

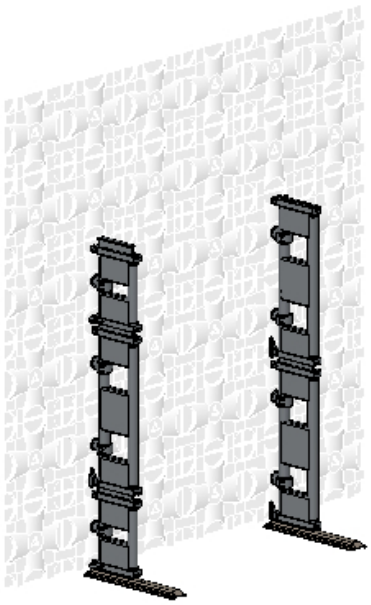
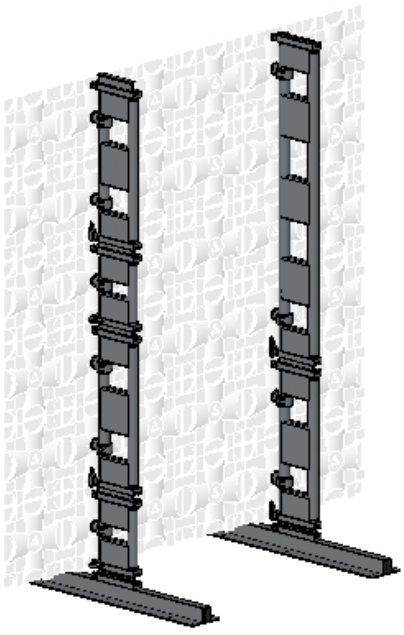
DANGER

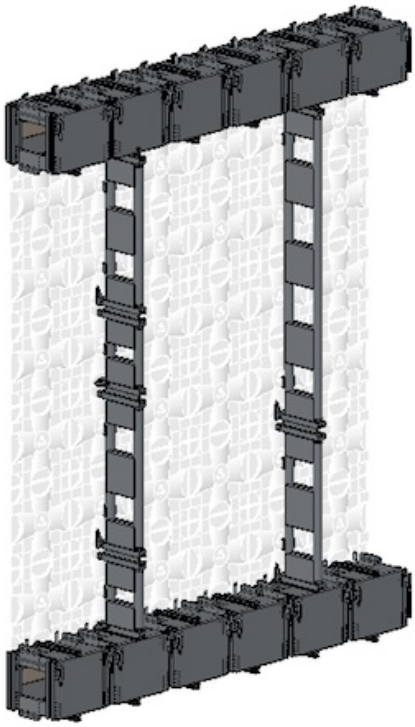
The user must accept responsibility for the correct application of products and methods based on local conditions.
Never exceed the working load limits.
Avoid shock loads.
Inspect products regularly.
If you are not sure of the proper use of a product consult with a rigging professional.

A variety of rigging hardware is available from Barco for deploying C-series displays.

Headers are used for suspending displays from overhead, while feet are used for to create floor standing or "stacked" installations. Both headers and feet are available in both light and heavy duty versions.
Vertical braces are used to provide structure in stacked and heavy duty hanging configurations.

The following chart shows the different types of hardware and their applications:

| | **Indoors / Minimal Wind Loading** | **Outdoors / Heavier Wind Loading** |
|---|---|---|
| **Stacked** | Light duty feet<br>Vertical braces<br>  | Heavy duty feet<br>Vertical braces<br>  |

| | Indoors / Minimal Wind Loading | Outdoors / Heavier Wind Loading |
|---|---|---|
| **Hanging** | Light duty headers<br> | Heavy duty headers<br>Vertical braces<br>  |

Displays may be horizontally curved in both suspended and floor mounted configurations.

2.5.1 Stacked C-series Tiles
2.5.2 Light Duty Hanging
2.5.3 Heavy Duty Hanging

**NOTE**
You must calculate the maximum number of tiles (height) that can be hung for a given system as outlined in Stacking C-series Tiles, Light Duty Hanging and Heavy Duty Hanging.

## See also

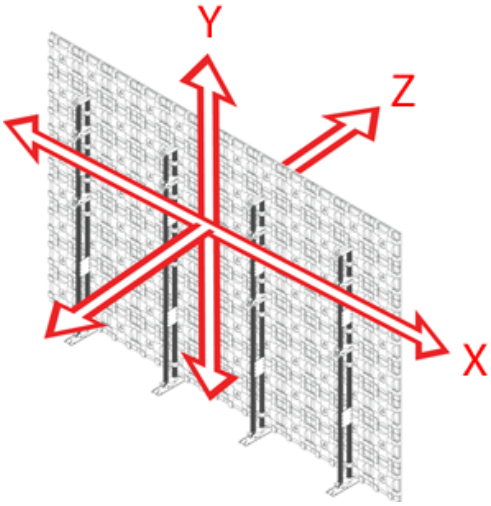
2.1 Safety & Installation Guidlines
2.2 System Overview
2.3 Power & Data Distribution
2.4 Assembly & Mounting
2.6 C-series Tile Appendices

# 2.5.1 Stacked C-series Tiles

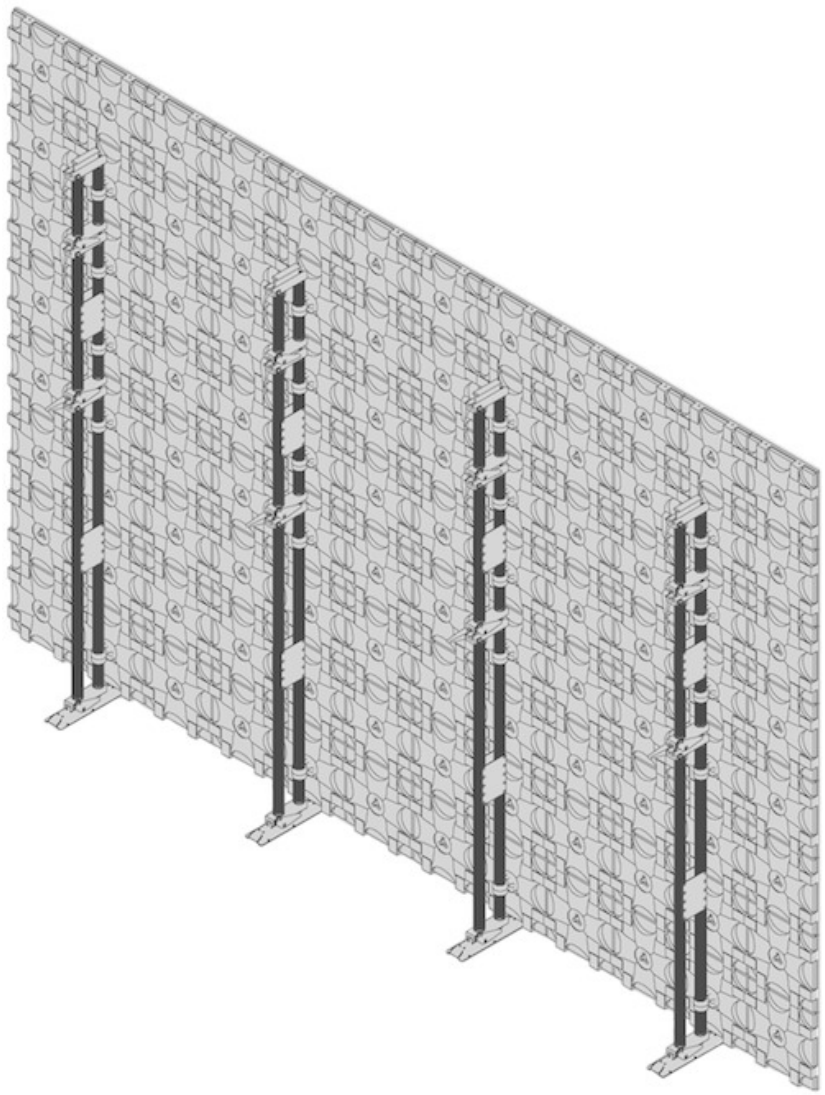
Feet and vertical braces are available from Barco for floor mounting C-series tiles.
Feet are available in both light duty and heavy duty versions.

WARNING

Vertical bracing for C-series tiles is for Z axis loading only. X and Y axis loads are carried by the C-series tiles themselves.




Example stacked system:



## See also

2.5.2 Light Duty Hanging
2.5.3 Heavy Duty Hanging

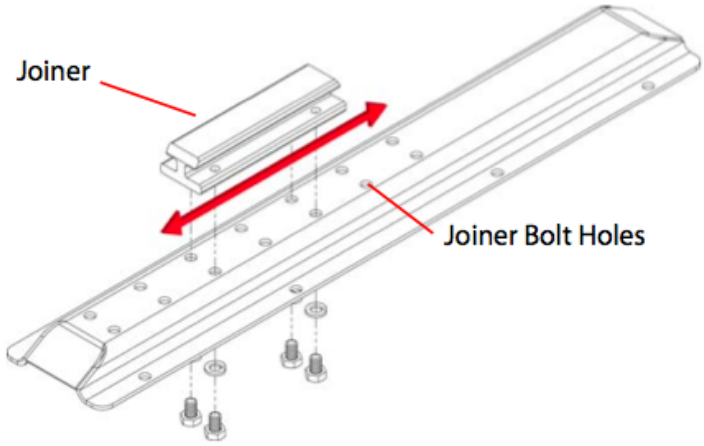
# 2.5.1.1 Feet

Two sizes of feet are available:

Light duty foot (600mm)
Heavy duty foot (1200mm)

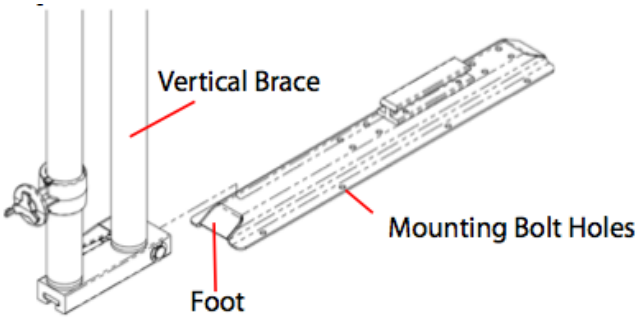
## Light Duty Foot

The light duty foot contains multiple holes to change the position of the joiner:




In general, position the joiner so the screen is centered over the foot.
For special applications the joiner may be moved, in which case the foot may need to be fastened to the floor. There are holes in the flanges of the foot for this purpose.

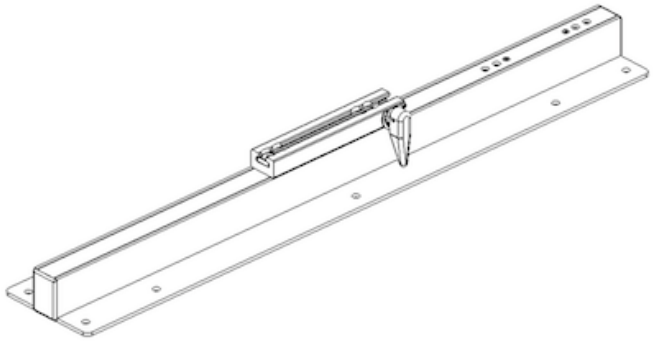
1 Slide a vertical brace onto the foot:




2 Gently rotate the locking handle to the locked (up) position, securing the brace in place:

## Heavy Duty Foot

The heavy duty foot contains multiple holes to change the position of the joiner receptacle. It can be located in the center, or at the end of the foot.
If the joiner receptacle is positioned at the end of the foot then the foot will need to be attached to the floor or heavily ballasted to keep the screen from tipping over. The details of attachement must be determined by the user on site.



In general, position the joiner so the screen is centered over foot.
For special applications the joiner may be moved, in which case the foot may need to be fastened to the floor. There are holes in the flanges of the foot for this purpose.

Attaching a vertical brace to the heavy duty foot is similar to the light duty foot, except that you need a standard joiner (P/N 430-0158) to complete the connection.

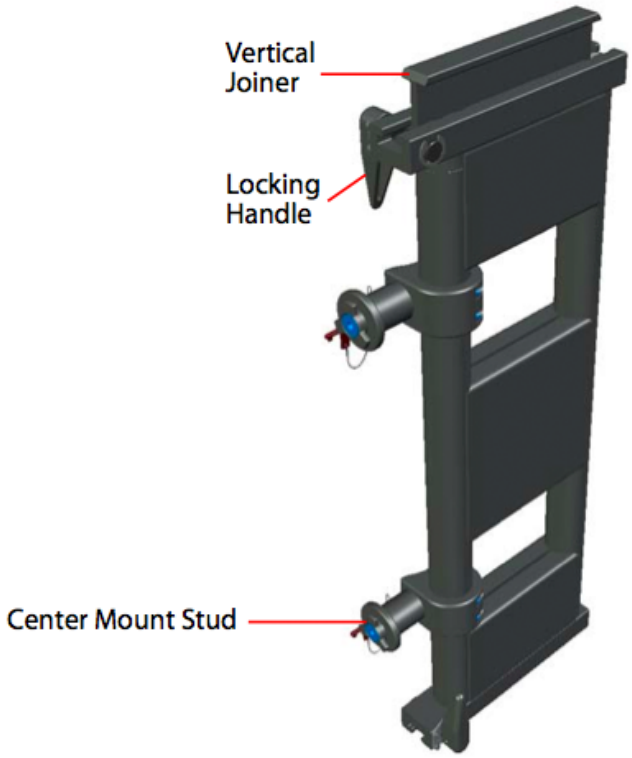
**NOTE**
The size of the display may require mounting the foot to a stable surface such as a floor via the bolt holes.

## See also

2.5.1.2 Vertical Braces
2.5.1.3 Assembly of Stacked Screens
2.5.1.4 Wind Speed Charts

# 2.5.1.2 Vertical Braces

## Vertical Brace Detail




## See also

2.5.1.1 Feet
2.5.1.3 Assembly of Stacked Screens
2.5.1.4 Wind Speed Charts

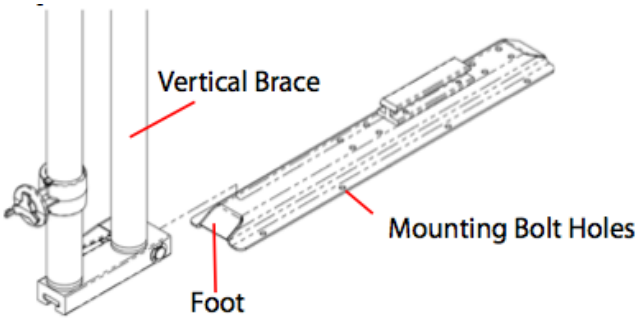
# 2.5.1.3 Assembly of Stacked Screens

## General Guidelines

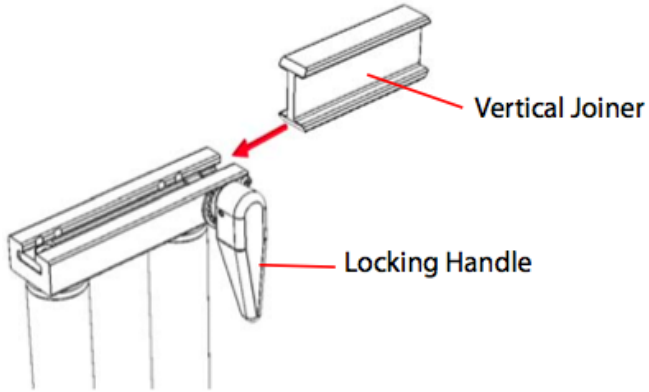
- When using light duty feet in minimal wind loaded installations, the vertical braces may be two tiles shorter than the height of the display.
- When using heavy duty feet with more wind loading, the vertical braces should extend the full height of the display.
- Feet with vertical braces should be located every fourth column of tiles.
- Position the vertical braces on the feet so that the display is over the center of the foot. If the display is off center on the feet then ballast or attachment of the feet to the floor may be necessary.

## Assembly of Feet & Vertical Braces

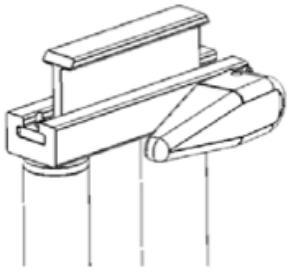
1 Slide the first vertical brace onto the foot:



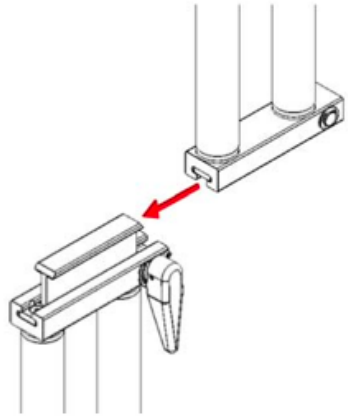

2 With the locking handle in the open (down) position, slide the vertical joiner onto the vertical brace:




3 Gently rotate the locking handle to the locked (up) position, securing the joiner in place:

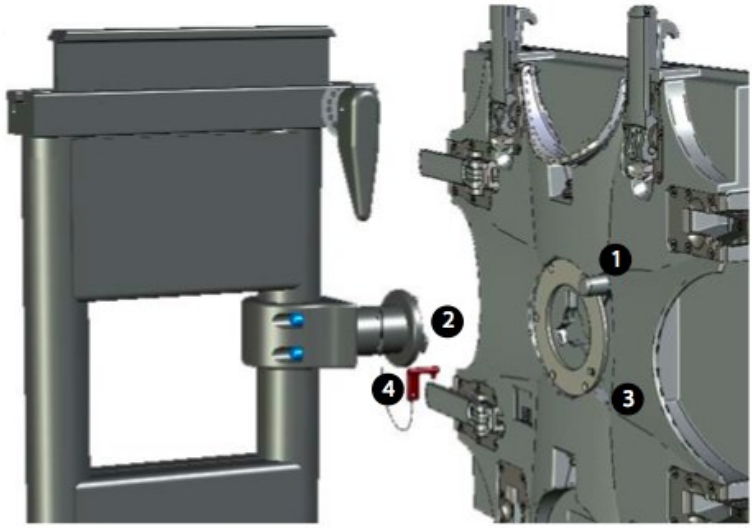


4 Slide the next vertical brace onto the joiner attached to the first vertical brace.



5 Move the locking handle on the second vertical brace to the locked (up) position, securing the second vertical brace to the joiner (not illustrated).

## How to Use the Center Mount




1 Ensure the lock/unlock lever is in the unlocked (up) position to begin.
2 Align the center mount stud with the socket and push into place.
3 Move the lock/unlock lever to the locked (down) position.
4 Insert the safety key into the hole and turn 90° to secure.

**NOTE**
Ensure the lock/unlock lever is fully engaged in the lock position (down) when using the center mount. The lever will click into place to indicate it is fully engaged.

## See also

2.5.1.1 Feet
2.5.1.2 Vertical Braces
2.5.1.4 Wind Speed Charts

# 2.5.1.4 Wind Speed Charts

DANGER
Failure to follow these guidelines could result in personal injury and/or damage to the C-series tile(s).

A stacked screen can withstand a certain amount of wind loading, depending on the foot used and the position of the screen on the foot.

## Light Duty Feet

Light duty feet are primarily intended for indoor use, where wind loading is negligible.
If the feet are fixed (attached to the floor) then maximum allowable height and/or wind loading may be greater than the chart below. This can only be determined based on the local site conditions by the installation technician.

**Maximum Height of a C-series Screen, Stacked, Light Duty Feet (600mm)**

| Height (# of tiles) | Height (meters) | Wind Speed (km/hr) | Wind Speed (miles/hr) | Beaufort Scale |
|---|---|---|---|---|
| 1 | 0.4 | 57 | 35 | 7 |
| 2 | 0.8 | 40 | 25 | 6 |
| 3 | 1.2 | 33 | 21 | 5 |
| 4 | 1.6 | 28 | 17 | 4 |
| 5 | 2.0 | 25 | 16 | 4 |
| 6 | 2.4 | 23 | 14 | 4 |
| 7 | 2.8 | 21 | 13 | 4 |
| 8 | 3.2 | 20 | 12 | 4 |
| 9 | 3.6 | 19 | 12 | 3 |
| 10 | 4.0 | 18 | 11 | 3 |

See Appendix A for an explanation of the Beaufort Scale

## Heavy Duty Feet

Heavy duty feet can be used for taller screens or to withstand higher amounts of wind loading.
If the feet are fixed (attached to the floor) then maximum allowable height and/or wind loading may be greater than the chart below. This can only be determined based on the local site conditions by the installation technician.

**Maximum Height of a C-series Screen, Stacked, Heavy Duty Feet (1200mm)**

| Height (# of tiles) | Height (meters) | Wind Speed (km/hr) | Wind Speed (miles/hr) | Beaufort Scale |
|---|---|---|---|---|
| 1 | 0.4 | 80 | 22 | 9 |
| 2 | 0.8 | 57 | 16 | 7 |
| 3 | 1.2 | 46 | 13 | 6 |
| 4 | 1.6 | 40 | 11 | 6 |
| 5 | 2.0 | 36 | 10 | 5 |
| 6 | 2.4 | 33 | 9 | 5 |
| 7 | 2.8 | 30 | 8 | 5 |
| 8 | 3.2 | 28 | 8 | 4 |
| 9 | 3.6 | 27 | 7 | 4 |
| 10 | 4.0 | 25 | 7 | 4 |
| 11 | 4.4 | 24 | 7 | 4 |
| 12 | 4.8 | 23 | 6 | 4 |

## See also

2.5.1.1 Feet
2.5.1.2 Vertical Braces
2.5.1.3 Assembly of Stacked Screens

# 2.5.2 Light Duty Hanging

C-series tiles must be suspended within specific guidelines to ensure proper weight and wind loading.
The charts and tables in this chapter provide the maximum number of tiles that can be supported using light duty headers.
See Assembly & Mounting Basics for additional information.

## Light Duty Header Types

| Name | Part # | # Panels / Header Horiz | Max Panels Horiz | Max Panels Vert | Other Info |
|---|---|---|---|---|---|
| 1x LD Header, Adjustable Angle | 430-0183 | 1 | modular | 25 | Horizontal curve possible when multiple headers are placed together. |
| 1x LD Header | 430-0184 | 1 | modular | 25 | Straight installation only. |
| 2x LD Header | 430-0185 | 2 | modular | 25 | Straight installation only. |
| 3x LD Header | 430-0186 | 3 | modular | 25 | Straight installation only. |
| 4x LD Header | 430-0187 | 4 | modular | 25 | Straight installation only. |

Light Duty Header Detail
Light Duty Header Operation
Adjusting the Hooks on a Light Duty Header
Rigging Options
Rigging Example: Multiple LD Headers
Rigging Charts: Multiple LD Headers
Cantilever Rigging
Wind Speed Calculations

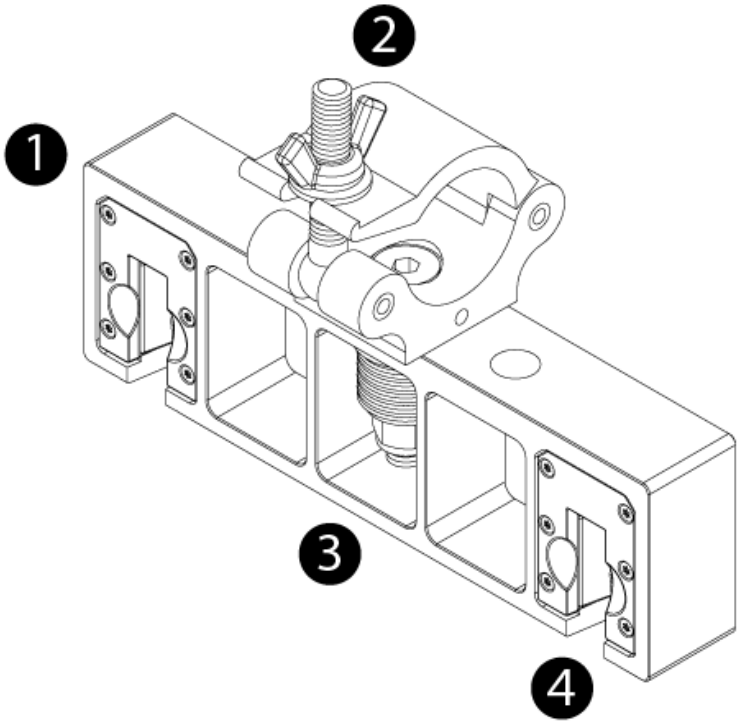
DANGER

Do not hang more than 25 panels (10 m) tall with the integral rigging hardware.
No lifting point should support more than 100 tiles (1411 lb / 640 kg).
Failure to equalize the load among all pickup points could result in serious injury.

## See also

2.5.1 Stacked C-series Tiles
2.5.3 Heavy Duty Hanging

# 2.5.2.1 Light Duty Header Detail




1 Machined 'Universal Header' chassis
2 Chesebrough clamp - Truss mounting hardware
3 Disk spring assembly - Load distribution mechanism
4 Latch Catch - Socket for locking C-series panels to header.

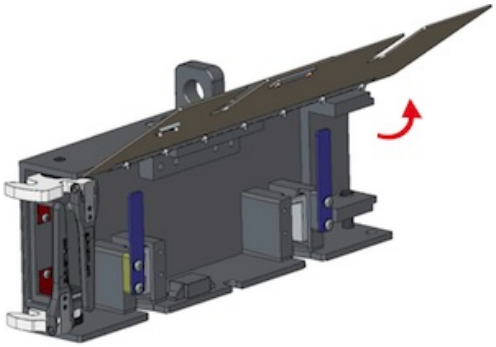
## See also

2.5.2.2 Light Duty Header Operation
2.5.2.3 Adjusting the Hooks on a Light Duty Header
2.5.2.4 Light Duty Hanging Options
2.5.2.5 Example: Multiple Light Duty Headers
2.5.2.6 Load Charts: Multiple Light Duty Headers
2.5.2.7 Cantilever Hanging
2.5.2.8 Light Duty Header Wind Speed Charts

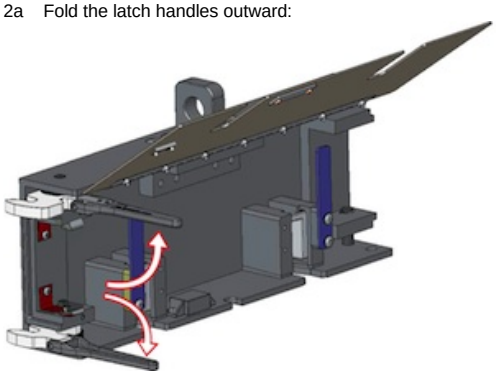
# 2.5.2.2 Light Duty Header Operation

## Locking Light Duty Headers Together

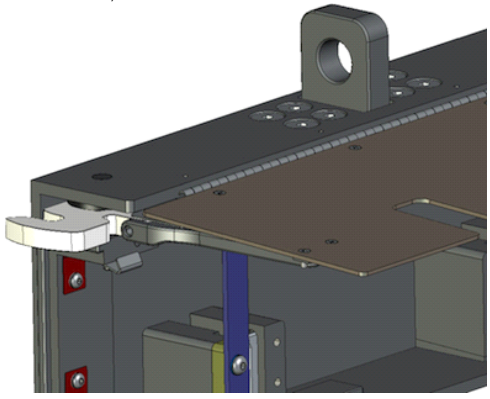
1 Open the access door:



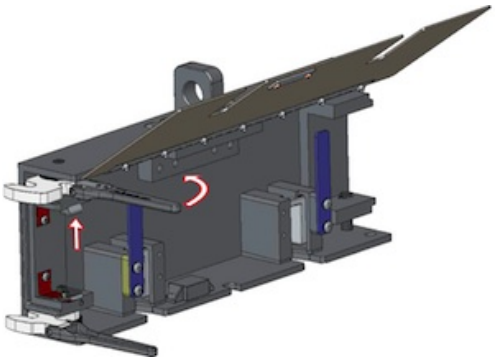
2a Fold the latch handles outward:



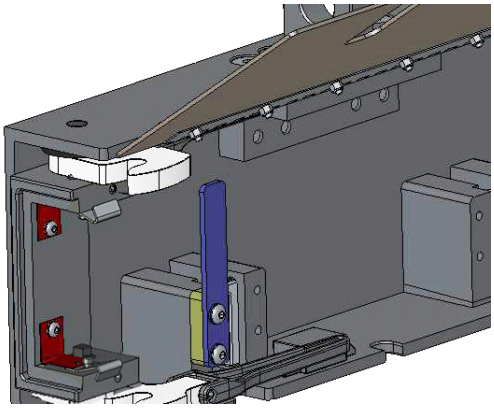
2b If desired, the access door can now rest on the handle:



3a Push the hook safety tab up to release the safety pin,
3b pull the latch handle towards the opposite end of the header (to the right in this illustration):

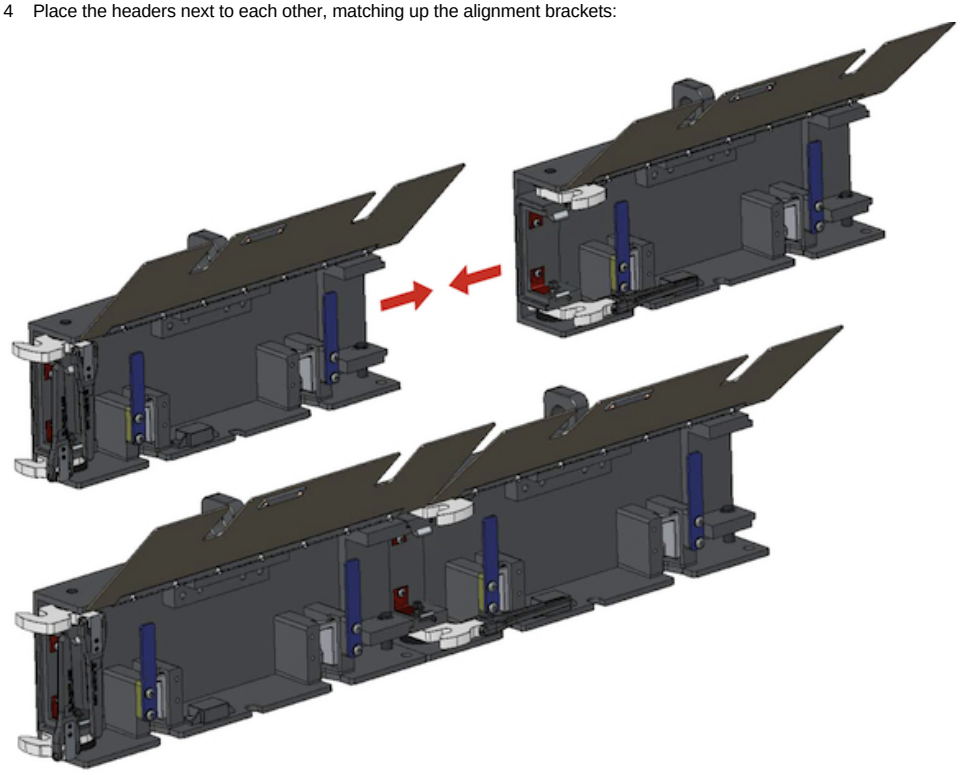


3c The hook will now be in the open position:

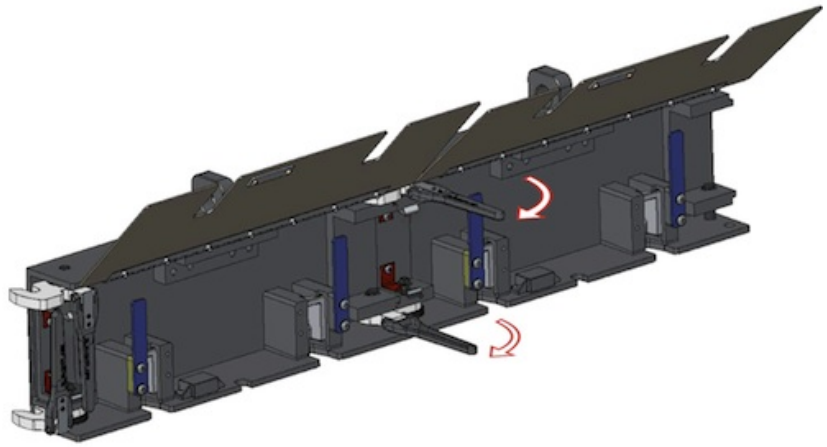


Repeat steps 3a and 3b for the other hook.

4 Place the headers next to each other, matching up the alignment brackets:

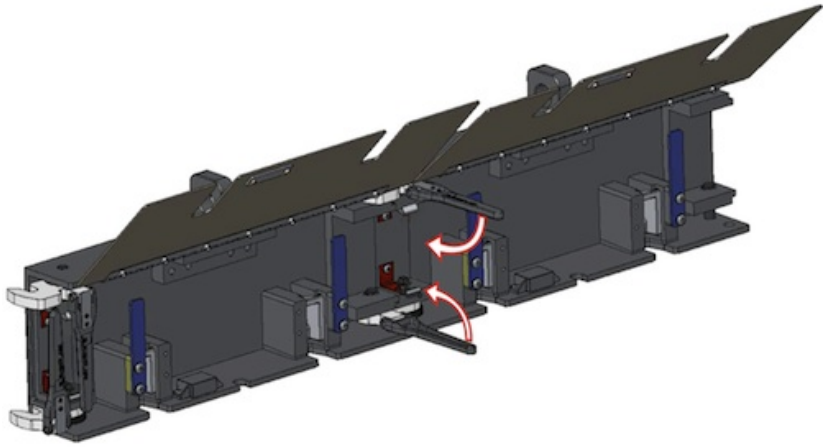


5 Pull the latch handles toward the second header so the hooks lock into place:

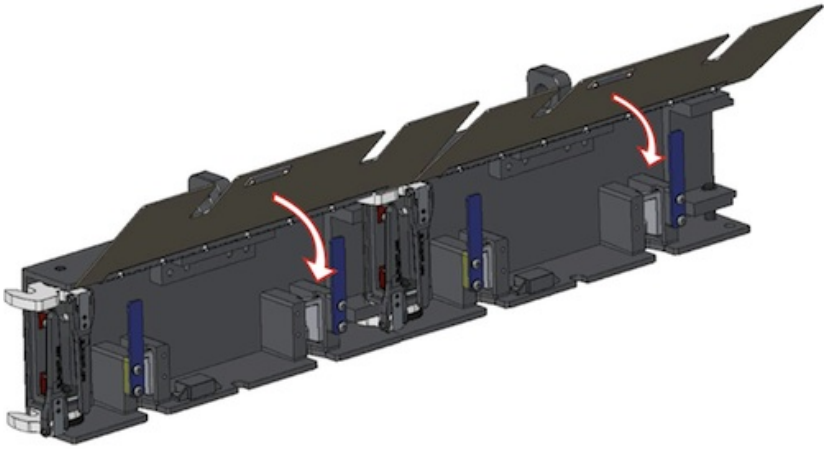


**NOTE**
If the hooks do not tighten all the way, you may need to adjust them. Please refer to How to Adjust the Hooks on a Light Duty Header for information.

6 Fold both latch handles inside the header:



7 Close the cover of both headers:

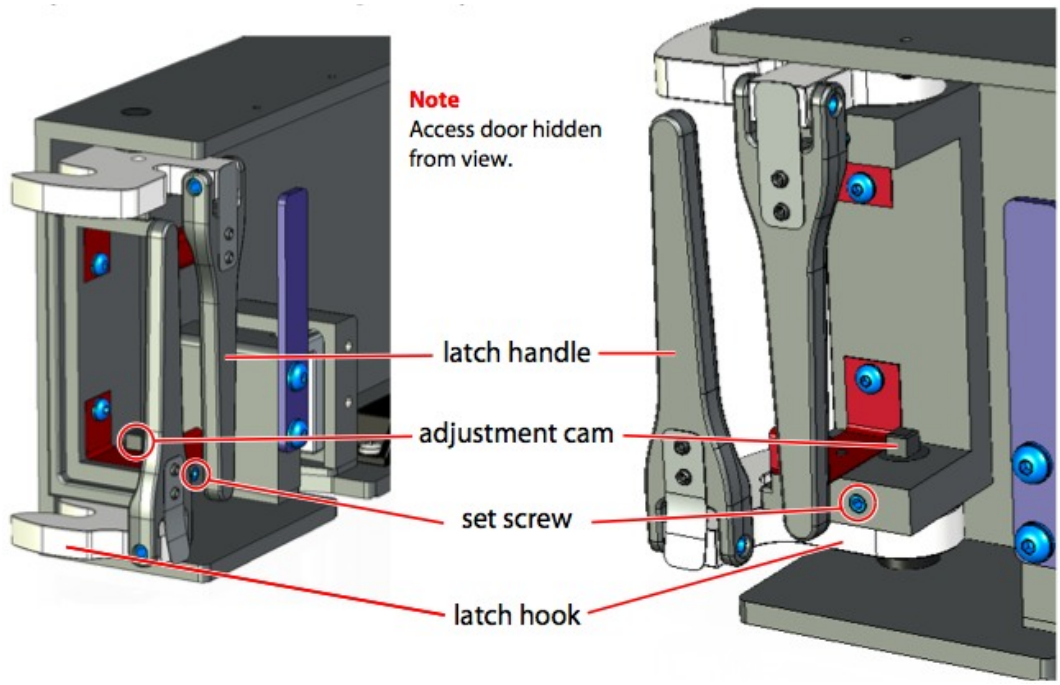


Reverse the steps above to disconnect headers.

## See also

2.5.2.1 Light Duty Header Detail
2.5.2.3 Adjusting the Hooks on a Light Duty Header
2.5.2.4 Light Duty Hanging Options
2.5.2.5 Example: Multiple Light Duty Headers
2.5.2.6 Load Charts: Multiple Light Duty Headers
2.5.2.7 Cantilever Hanging
2.5.2.8 Light Duty Header Wind Speed Charts

# 2.5.2.3 Adjusting the Hooks on a Light Duty Header




1. Loosen the set screw.
2. Ensure the latch hook is engaged with the mating header (not shown above). It may be necessary to rotate the adjustment cam by hand before this is possible.
3. Turn the adjustment cam until a moderate amount of pressure is felt. The direction of rotation is not important. If the cam turns a full 360° without any pressure being felt, ensure the hook is correctly engaged.
   If it is correctly engaged and the cam still rotates freely through 360°, contact Barco technical support.
4. Lock the cam into position by tightening the set screw.
5. Check the latch hook action. The hook should require firm (but not excessive) pressure to close.
6. If further adjustment is required, repeat steps 1-5.

## See also

2.5.2.1 Light Duty Header Detail
2.5.2.2 Light Duty Header Operation
2.5.2.4 Light Duty Hanging Options
2.5.2.5 Example: Multiple Light Duty Headers
2.5.2.6 Load Charts: Multiple Light Duty Headers
2.5.2.7 Cantilever Hanging
2.5.2.8 Light Duty Header Wind Speed Charts

# 2.5.2.4 Light Duty Hanging Options

There are two primary options available to suspend a C-series display on a light duty header:

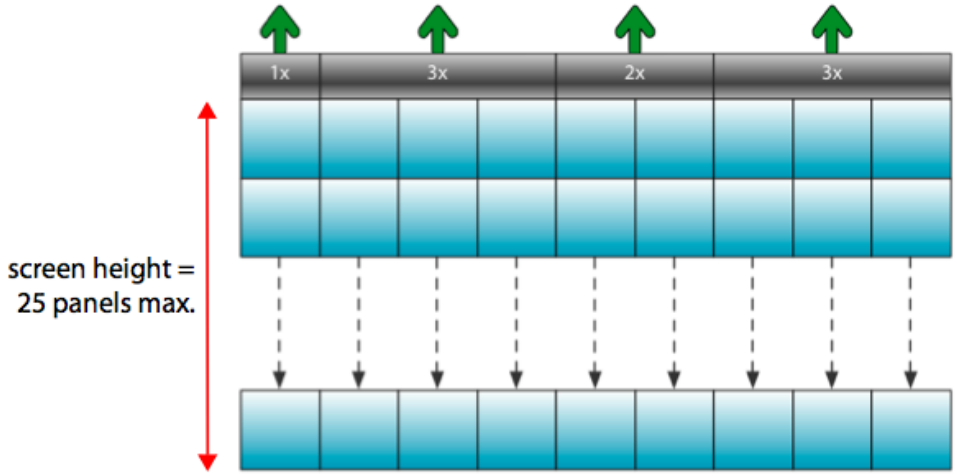
- Each header used in the display is individually supported
- Multiple headers used in the display are suspended from only two mounting points

Both of these styles can also accommodate a certain number of tiles cantilevered to the outside of the supported headers.

DANGER
All headers must be equally supported. Failure to do so may result in serious personal injury and/or damage to the C-series system.

## Individually Supported Light Duty Headers

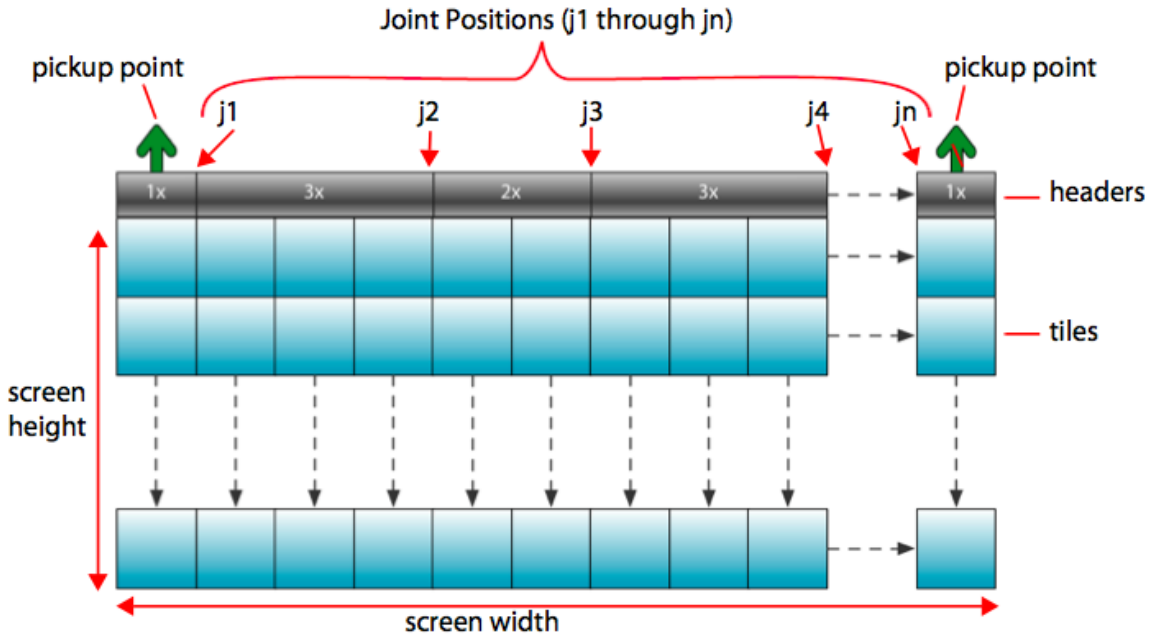
Any combination of headers can be connected together to make a C-series display.
If each header has it's own support, the maximum screen height will always be 25 panels.




## Multiple Light Duty Headers With Two Mounting Points

When multiple light duty headers are suspended by only two mounting points located on the farthest left and farthest right headers, you must calculate the maximum safe height of the display using the tables in load charts given later in the chapter.
The following information is used for these calculations:

- Headers: width of the headers used in the far left and far right position (1x, 2x, 3x, or 4x)
- Width: overall screen width
- Joint positions: the number of tiles from the left edge of the screen to each header joint.

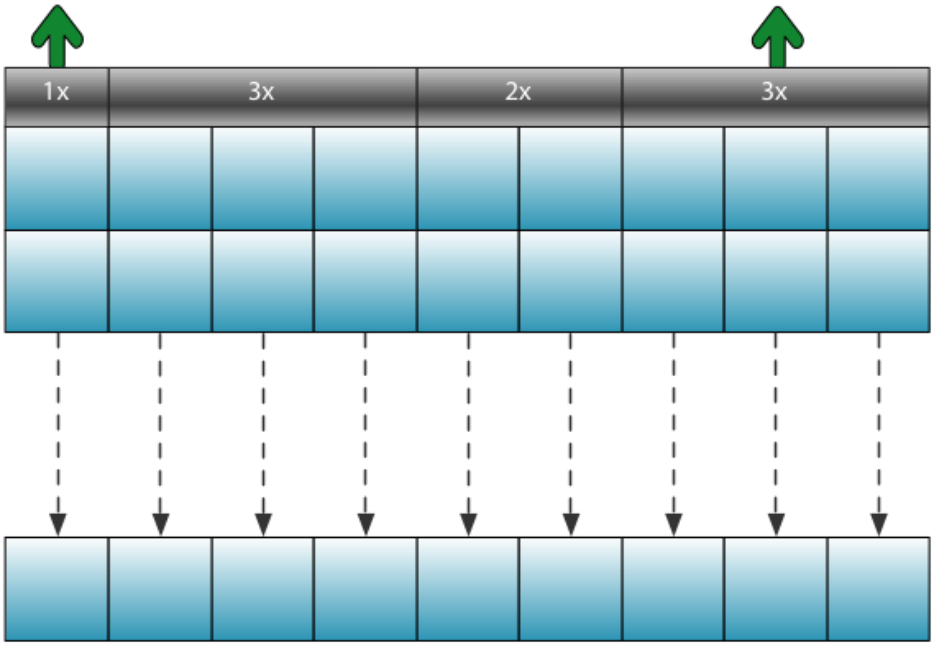



**NOTE**
The lowest maximum height calculated must be used. Failure to follow this guideline could result in serious injury.

## See also

2.5.2.1 Light Duty Header Detail
2.5.2.2 Light Duty Header Operation
2.5.2.3 Adjusting the Hooks on a Light Duty Header
2.5.2.5 Example: Multiple Light Duty Headers
2.5.2.6 Load Charts: Multiple Light Duty Headers
2.5.2.7 Cantilever Hanging
2.5.2.8 Light Duty Header Wind Speed Charts

# 2.5.2.5 Example: Multiple Light Duty Headers




The example above illustrates a screen using multiple light duty headers with two mounting points.
Follow the steps below to calculate the maximum height for this example.
In all cases, the lowest number dictates the maximum allowable height.

**Step 1**
Gather the data from the screen setup. The example screen has the following parameters:
• Headers: left header = 1x, right header = 3x
• Width: 9 tiles
• Joint Positions:
  - J1 = 1
  - J2 = 4
  - J3 = 6

**Step 2**
Find the table corresponding to the type of headers in the far left and far right position.
For this example, use Rigging Chart: Left = 1x Header, Right = 3x Header.

**Step 3**
Find the maximum height value for each of the joint positions (J1, J2, J3) with a screen width of 9 tiles.
The results are: J1= 20, J2 = 5, J3 = 9.
The lowest calculated height is 5, so the maximum height of this example setup is 5 C-series tiles.

## See also

2.5.2.1 Light Duty Header Detail
2.5.2.2 Light Duty Header Operation
2.5.2.3 Adjusting the Hooks on a Light Duty Header
2.5.2.4 Light Duty Hanging Options
2.5.2.6 Load Charts: Multiple Light Duty Headers
2.5.2.7 Cantilever Hanging
2.5.2.8 Light Duty Header Wind Speed Charts

# 2.5.2.6 Load Charts: Multiple Light Duty Headers

Select the chart that corresponds to the size of the far left and far right headers:

| | | | |
|---|---|---|---|
| Left = 1x, Right = 1x | Left = 2x, Right = 1x | Left = 3x, Right = 1x | Left = 4x, Right = 1x |
| Left = 1x, Right = 2x | Left = 2x, Right = 2x | Left = 3x, Right = 2x | Left = 4x, Right = 2x |
| Left = 1x, Right = 3x | Left = 2x, Right = 3x | Left = 3x, Right = 3x | Left = 4x, Right = 3x |
| Left = 1x, Right = 4x | Left = 2x, Right = 4x | Left = 3x, Right = 4x | Left = 4x, Right = 4x |

## See also

2.5.2.1 Light Duty Header Detail
2.5.2.2 Light Duty Header Operation
2.5.2.3 Adjusting the Hooks on a Light Duty Header
2.5.2.4 Light Duty Hanging Options
2.5.2.5 Example: Multiple Light Duty Headers
2.5.2.7 Cantilever Hanging
2.5.2.8 Light Duty Header Wind Speed Charts

# Left = 1x, Right = 1x

## Multiple Light Duty Headers

Rigging Chart: Left = 1x Header, Right = 1x Header

Left = 1x

Right = 1x

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | 25 | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 17 | 17 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 11 | 9 | 11 | 25 | | | | | | | | | | | | |
| 7 | 23 | 9 | 7 | 7 | 9 | 23 | | | | | | | | | | | |
| 8 | 19 | 7 | 5 | 4 | 5 | 7 | 19 | | | | | | | | | | |
| 9 | 17 | 6 | 4 | 3 | 3 | 4 | 6 | 17 | | | | | | | | | |
| 10 | 14 | 5 | 3 | 3 | 2 | 3 | 3 | 5 | 14 | | | | | | | | |
| 11 | 13 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 4 | 13 | | | | | | | |
| 12 | 11 | 4 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 4 | 11 | | | | | | |
| 13 | 10 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 10 | | | | | |
| 14 | 9 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 9 | | | | |
| 15 | 9 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 9 | | | |
| 16 | 8 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 8 | | |
| 17 | 7 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 7 | |
| 18 | 7 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 7 |

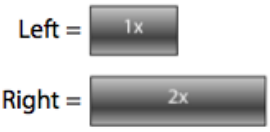
## See also

Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 1x, Right = 2x

## Multiple Light Duty Headers

Rigging Chart: Left = 1x Header, Right = 2x Header




| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | 25 | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 24 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 14 | 13 | 22 | 25 | | | | | | | | | | | | |
| 7 | 25 | 10 | 8 | 9 | 16 | 25 | | | | | | | | | | | |
| 8 | 22 | 8 | 6 | 6 | 7 | 12 | 25 | | | | | | | | | | |
| 9 | 18 | 6 | 4 | 4 | 4 | 5 | 10 | 25 | | | | | | | | | |
| 10 | 16 | 5 | 4 | 3 | 3 | 3 | 4 | 9 | 25 | | | | | | | | |
| 11 | 14 | 5 | 3 | 2 | 2 | 2 | 3 | 4 | 7 | 25 | | | | | | | |
| 12 | 12 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 6 | 25 | | | | | | |
| 13 | 11 | 4 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 3 | 6 | 25 | | | | | |
| 14 | 10 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 5 | 25 | | | | |
| 15 | 9 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 25 | | | |
| 16 | 8 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 25 | | |
| 17 | 8 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 25 | |
| 18 | 7 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 4 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 1x, Right = 3x

## Multiple Light Duty Headers

Rigging Chart: Left = 1x Header, Right = 3x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 21 | 25 | 25 | 25 | | | | | | | | | | | | |
| 7 | 25 | 13 | 11 | 16 | 25 | 25 | | | | | | | | | | | |
| 8 | 25 | 9 | 7 | 8 | 11 | 25 | 25 | | | | | | | | | | |
| 9 | 20 | 7 | 5 | 5 | 6 | 9 | 25 | 25 | | | | | | | | | |
| 10 | 17 | 6 | 4 | 4 | 4 | 4 | 7 | 25 | 25 | | | | | | | | |
| 11 | 15 | 5 | 3 | 3 | 3 | 3 | 4 | 6 | 25 | 25 | | | | | | | |
| 12 | 13 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 5 | 22 | 25 | | | | | | |
| 13 | 12 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 19 | 25 | | | | | |
| 14 | 11 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 16 | 25 | | | | |
| 15 | 10 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 14 | 25 | | | |
| 16 | 9 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 13 | 25 | | |
| 17 | 8 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 11 | 25 | |
| 18 | 8 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 3 | 10 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 1x, Right = 4x

## Multiple Light Duty Headers

Rigging Chart: Left = 1x Header, Right = 4x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 14 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 14 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 14 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 25 | 25 | 14 | 25 | | | | | | | | | | | | |
| 7 | 25 | 19 | 22 | 25 | 14 | 25 | | | | | | | | | | | |
| 8 | 25 | 12 | 10 | 13 | 25 | 14 | 25 | | | | | | | | | | |
| 9 | 24 | 9 | 7 | 7 | 9 | 25 | 14 | 25 | | | | | | | | | |
| 10 | 19 | 7 | 5 | 4 | 5 | 7 | 19 | 14 | 25 | | | | | | | | |
| 11 | 16 | 6 | 4 | 3 | 3 | 4 | 6 | 15 | 14 | 25 | | | | | | | |
| 12 | 14 | 5 | 3 | 3 | 2 | 3 | 3 | 5 | 12 | 14 | 25 | | | | | | |
| 13 | 13 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 4 | 10 | 14 | 25 | | | | | |
| 14 | 11 | 4 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 8 | 14 | 25 | | | | |
| 15 | 10 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 7 | 14 | 25 | | | |
| 16 | 9 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 6 | 14 | 25 | | |
| 17 | 9 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 6 | 14 | 25 | |
| 18 | 8 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 14 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 2x, Right = 1x

## Multiple Light Duty Headers

Rigging Chart: Left = 2x Header, Right = 1x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | 25 | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 24 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 22 | 13 | 14 | 25 | | | | | | | | | | | | |
| 7 | 25 | 16 | 9 | 8 | 10 | 25 | | | | | | | | | | | |
| 8 | 25 | 12 | 7 | 6 | 6 | 8 | 22 | | | | | | | | | | |
| 9 | 25 | 10 | 5 | 4 | 4 | 4 | 6 | 18 | | | | | | | | | |
| 10 | 25 | 9 | 4 | 3 | 3 | 3 | 4 | 5 | 16 | | | | | | | | |
| 11 | 25 | 7 | 4 | 3 | 2 | 2 | 2 | 3 | 5 | 14 | | | | | | | |
| 12 | 25 | 6 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 12 | | | | | | |
| 13 | 25 | 6 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 4 | 11 | | | | | |
| 14 | 25 | 5 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 10 | | | | |
| 15 | 25 | 5 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 9 | | | |
| 16 | 25 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 8 | | |
| 17 | 25 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 8 | |
| 18 | 25 | 4 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 7 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 2x, Right = 2x

## Multiple Light Duty Headers

Rigging Chart: Left = 2x Header, Right = 2x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | 25 | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 25 | 19 | 25 | 25 | | | | | | | | | | | | |
| 7 | 25 | 19 | 11 | 11 | 19 | 25 | | | | | | | | | | | |
| 8 | 25 | 14 | 8 | 7 | 8 | 14 | 25 | | | | | | | | | | |
| 9 | 25 | 11 | 6 | 5 | 5 | 6 | 11 | 25 | | | | | | | | | |
| 10 | 25 | 9 | 5 | 4 | 3 | 4 | 5 | 9 | 25 | | | | | | | | |
| 11 | 25 | 8 | 4 | 3 | 3 | 3 | 3 | 4 | 8 | 25 | | | | | | | |
| 12 | 25 | 7 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 7 | 25 | | | | | | |
| 13 | 25 | 6 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 6 | 25 | | | | | |
| 14 | 25 | 5 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 5 | 25 | | | | |
| 15 | 25 | 5 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 5 | 25 | | | |
| 16 | 25 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 25 | | |
| 17 | 25 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 25 | |
| 18 | 25 | 4 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 4 | 25 |

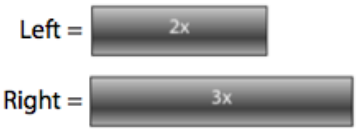
## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 2x, Right = 3x

## Multiple Light Duty Headers

Rigging Chart: Left = 2x Header, Right = 3x Header




| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 25 | 25 | 25 | 25 | | | | | | | | | | | | |
| 7 | 25 | 25 | 17 | 22 | 25 | 25 | | | | | | | | | | | |
| 8 | 25 | 18 | 10 | 10 | 14 | 25 | 25 | | | | | | | | | | |
| 9 | 25 | 13 | 7 | 6 | 7 | 10 | 25 | 25 | | | | | | | | | |
| 10 | 25 | 11 | 6 | 4 | 4 | 5 | 8 | 25 | 25 | | | | | | | | |
| 11 | 25 | 9 | 5 | 3 | 3 | 3 | 4 | 7 | 25 | 25 | | | | | | | |
| 12 | 25 | 8 | 4 | 3 | 2 | 2 | 3 | 3 | 6 | 25 | 25 | | | | | | |
| 13 | 25 | 7 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 21 | 25 | | | | | |
| 14 | 25 | 6 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 4 | 18 | 25 | | | | |
| 15 | 25 | 5 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 15 | 25 | | | |
| 16 | 25 | 5 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 13 | 25 | | |
| 17 | 25 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 12 | 25 | |
| 18 | 25 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 11 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 2x, Right = 4x

## Multiple Light Duty Headers

Rigging Chart: Left = 2x Header, Right = 4x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 14 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 14 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 14 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 25 | 25 | 14 | 25 | | | | | | | | | | | | |
| 7 | 25 | 25 | 25 | 25 | 14 | 25 | | | | | | | | | | | |
| 8 | 25 | 24 | 15 | 18 | 25 | 14 | 25 | | | | | | | | | | |
| 9 | 25 | 17 | 9 | 9 | 11 | 25 | 14 | 25 | | | | | | | | | |
| 10 | 25 | 13 | 7 | 6 | 6 | 8 | 24 | 14 | 25 | | | | | | | | |
| 11 | 25 | 10 | 5 | 4 | 4 | 4 | 6 | 17 | 14 | 25 | | | | | | | |
| 12 | 25 | 8 | 4 | 3 | 3 | 3 | 3 | 5 | 13 | 14 | 25 | | | | | | |
| 13 | 25 | 7 | 4 | 3 | 2 | 2 | 2 | 3 | 4 | 11 | 14 | 25 | | | | | |
| 14 | 25 | 6 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 9 | 14 | 25 | | | | |
| 15 | 25 | 6 | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 8 | 14 | 25 | | | |
| 16 | 25 | 5 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 7 | 14 | 25 | | |
| 17 | 25 | 5 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 6 | 14 | 25 | |
| 18 | 25 | 4 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 14 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 3x, Right = 1x

## Multiple Light Duty Headers

Rigging Chart: Left = 3x Header, Right = 1x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 25 | 25 | 21 | 25 | | | | | | | | | | | | |
| 7 | 25 | 25 | 16 | 11 | 13 | 25 | | | | | | | | | | | |
| 8 | 25 | 25 | 11 | 8 | 7 | 9 | 25 | | | | | | | | | | |
| 9 | 25 | 25 | 9 | 6 | 5 | 5 | 7 | 20 | | | | | | | | | |
| 10 | 25 | 25 | 7 | 4 | 4 | 4 | 4 | 6 | 17 | | | | | | | | |
| 11 | 25 | 25 | 6 | 4 | 3 | 3 | 3 | 3 | 5 | 15 | | | | | | | |
| 12 | 25 | 22 | 5 | 3 | 2 | 2 | 2 | 2 | 3 | 4 | 13 | | | | | | |
| 13 | 25 | 19 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 12 | | | | | |
| 14 | 25 | 16 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 11 | | | | |
| 15 | 25 | 14 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 10 | | | |
| 16 | 25 | 13 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 9 | | |
| 17 | 25 | 11 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 8 | |
| 18 | 25 | 10 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 8 |

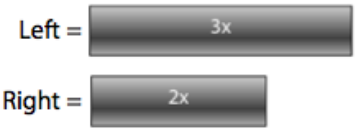
## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 3x, Right = 2x

## Multiple Light Duty Headers

Rigging Chart: Left = 3x Header, Right = 2x Header




| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 25 | 25 | 25 | 25 | | | | | | | | | | | | |
| 7 | 25 | 25 | 22 | 17 | 25 | 25 | | | | | | | | | | | |
| 8 | 25 | 25 | 14 | 10 | 10 | 18 | 25 | | | | | | | | | | |
| 9 | 25 | 25 | 10 | 7 | 6 | 7 | 13 | 25 | | | | | | | | | |
| 10 | 25 | 25 | 8 | 5 | 4 | 4 | 6 | 11 | 25 | | | | | | | | |
| 11 | 25 | 25 | 7 | 4 | 3 | 3 | 3 | 5 | 9 | 25 | | | | | | | |
| 12 | 25 | 25 | 6 | 3 | 3 | 2 | 2 | 3 | 4 | 8 | 25 | | | | | | |
| 13 | 25 | 21 | 5 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 7 | 25 | | | | | |
| 14 | 25 | 18 | 4 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 6 | 25 | | | | |
| 15 | 25 | 15 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 5 | 25 | | | |
| 16 | 25 | 13 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 25 | | |
| 17 | 25 | 12 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 25 | |
| 18 | 25 | 11 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 3x, Right = 3x

## Multiple Light Duty Headers

Rigging Chart: Left = 3x Header, Right = 3x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 25 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 25 | 25 | 25 | 25 | | | | | | | | | | | | |
| 7 | 25 | 25 | 25 | 25 | 25 | 25 | | | | | | | | | | | |
| 8 | 25 | 25 | 19 | 14 | 19 | 25 | 25 | | | | | | | | | | |
| 9 | 25 | 25 | 13 | 9 | 9 | 13 | 25 | 25 | | | | | | | | | |
| 10 | 25 | 25 | 9 | 6 | 5 | 6 | 9 | 25 | 25 | | | | | | | | |
| 11 | 25 | 25 | 7 | 5 | 4 | 4 | 5 | 7 | 25 | 25 | | | | | | | |
| 12 | 25 | 25 | 6 | 4 | 3 | 3 | 3 | 4 | 6 | 25 | 25 | | | | | | |
| 13 | 25 | 23 | 5 | 3 | 2 | 2 | 2 | 2 | 3 | 5 | 23 | 25 | | | | | |
| 14 | 25 | 19 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 19 | 25 | | | | |
| 15 | 25 | 17 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 17 | 25 | | | |
| 16 | 25 | 14 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 14 | 25 | | |
| 17 | 25 | 13 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 13 | 25 | |
| 18 | 25 | 11 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 11 | 25 |

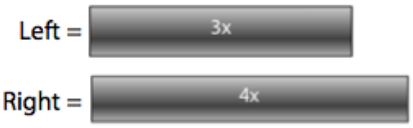
## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 3x, Right = 4x

## Multiple Light Duty Headers

Rigging Chart: Left = 3x Header, Right = 4x Header




| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | 25 | 14 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 25 | 14 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 25 | 25 | 14 | 25 | | | | | | | | | | | | |
| 7 | 25 | 25 | 25 | 25 | 14 | 25 | | | | | | | | | | | |
| 8 | 25 | 25 | 25 | 25 | 25 | 14 | 25 | | | | | | | | | | |
| 9 | 25 | 25 | 18 | 13 | 16 | 25 | 14 | 25 | | | | | | | | | |
| 10 | 25 | 25 | 12 | 8 | 8 | 10 | 25 | 14 | 25 | | | | | | | | |
| 11 | 25 | 25 | 9 | 6 | 5 | 5 | 8 | 21 | 14 | 25 | | | | | | | |
| 12 | 25 | 25 | 7 | 4 | 4 | 4 | 4 | 6 | 16 | 14 | 25 | | | | | | |
| 13 | 25 | 25 | 6 | 4 | 3 | 3 | 3 | 3 | 5 | 12 | 14 | 25 | | | | | |
| 14 | 25 | 22 | 5 | 3 | 2 | 2 | 2 | 2 | 3 | 4 | 10 | 14 | 25 | | | | |
| 15 | 25 | 18 | 4 | 3 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 8 | 14 | 25 | | | |
| 16 | 25 | 16 | 4 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 7 | 14 | 25 | | |
| 17 | 25 | 14 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 6 | 14 | 25 | |
| 18 | 25 | 12 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 6 | 14 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 4x, Right = 1x

## Multiple Light Duty Headers

Rigging Chart: Left = 4x Header, Right = 1x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 25 | 14 | | | | | | | | | | | | | | | |
| 4 | 25 | 14 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 14 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 14 | 25 | 25 | 25 | | | | | | | | | | | | |
| 7 | 25 | 14 | 25 | 22 | 19 | 25 | | | | | | | | | | | |
| 8 | 25 | 14 | 25 | 13 | 10 | 12 | 25 | | | | | | | | | | |
| 9 | 25 | 14 | 25 | 9 | 7 | 7 | 9 | 24 | | | | | | | | | |
| 10 | 25 | 14 | 19 | 7 | 5 | 4 | 5 | 7 | 19 | | | | | | | | |
| 11 | 25 | 14 | 15 | 6 | 4 | 3 | 3 | 4 | 6 | 16 | | | | | | | |
| 12 | 25 | 14 | 12 | 5 | 3 | 3 | 2 | 3 | 3 | 5 | 14 | | | | | | |
| 13 | 25 | 14 | 10 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 4 | 13 | | | | | |
| 14 | 25 | 14 | 8 | 3 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 4 | 11 | | | | |
| 15 | 25 | 14 | 7 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 10 | | | |
| 16 | 25 | 14 | 6 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 9 | | |
| 17 | 25 | 14 | 6 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 9 | |
| 18 | 25 | 14 | 5 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 8 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 2x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 4x, Right = 2x

## Multiple Light Duty Headers

Rigging Chart: Left = 4x Header, Right = 2x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | 25 | 25 | | | | | | | | | | | | | | | |
| 4 | 25 | 14 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 14 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 14 | 25 | 25 | 25 | | | | | | | | | | | | |
| 7 | 25 | 14 | 25 | 25 | 25 | 25 | | | | | | | | | | | |
| 8 | 25 | 14 | 25 | 18 | 15 | 24 | 25 | | | | | | | | | | |
| 9 | 25 | 14 | 25 | 11 | 9 | 9 | 17 | 25 | | | | | | | | | |
| 10 | 25 | 14 | 24 | 8 | 6 | 6 | 7 | 13 | 25 | | | | | | | | |
| 11 | 25 | 14 | 17 | 6 | 4 | 4 | 4 | 5 | 10 | 25 | | | | | | | |
| 12 | 25 | 14 | 13 | 5 | 3 | 3 | 3 | 3 | 4 | 8 | 25 | | | | | | |
| 13 | 25 | 14 | 11 | 4 | 3 | 2 | 2 | 2 | 3 | 4 | 7 | 25 | | | | | |
| 14 | 25 | 14 | 9 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 6 | 25 | | | | |
| 15 | 25 | 14 | 8 | 3 | 2 | 2 | 1 | 1 | 1 | 1 | 2 | 3 | 6 | 25 | | | |
| 16 | 25 | 14 | 7 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 5 | 25 | | |
| 17 | 25 | 14 | 6 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 5 | 25 | |
| 18 | 25 | 14 | 5 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 4 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 3x
Left = 4x, Right = 4x

# Left = 4x, Right = 3x

## Multiple Light Duty Headers

Rigging Chart: Left = 4x Header, Right =3x Header

| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | 25 | 14 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 14 | 25 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 14 | 25 | 25 | 25 | | | | | | | | | | | | |
| 7 | 25 | 14 | 25 | 25 | 25 | 25 | | | | | | | | | | | |
| 8 | 25 | 14 | 25 | 25 | 25 | 25 | 25 | | | | | | | | | | |
| 9 | 25 | 14 | 25 | 16 | 13 | 18 | 25 | 25 | | | | | | | | | |
| 10 | 25 | 14 | 25 | 10 | 8 | 8 | 12 | 25 | 25 | | | | | | | | |
| 11 | 25 | 14 | 21 | 8 | 5 | 5 | 6 | 9 | 25 | 25 | | | | | | | |
| 12 | 25 | 14 | 16 | 6 | 4 | 4 | 4 | 4 | 7 | 25 | 25 | | | | | | |
| 13 | 25 | 14 | 12 | 5 | 3 | 3 | 3 | 3 | 4 | 6 | 25 | 25 | | | | | |
| 14 | 25 | 14 | 10 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 5 | 22 | 25 | | | | |
| 15 | 25 | 14 | 8 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 4 | 18 | 25 | | | |
| 16 | 25 | 14 | 7 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 4 | 16 | 25 | | |
| 17 | 25 | 14 | 6 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 14 | 25 | |
| 18 | 25 | 14 | 6 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 12 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 4x

# Left = 4x, Right = 4x

## Multiple Light Duty Headers

Rigging Chart: Left = 4x Header, Right =4x Header

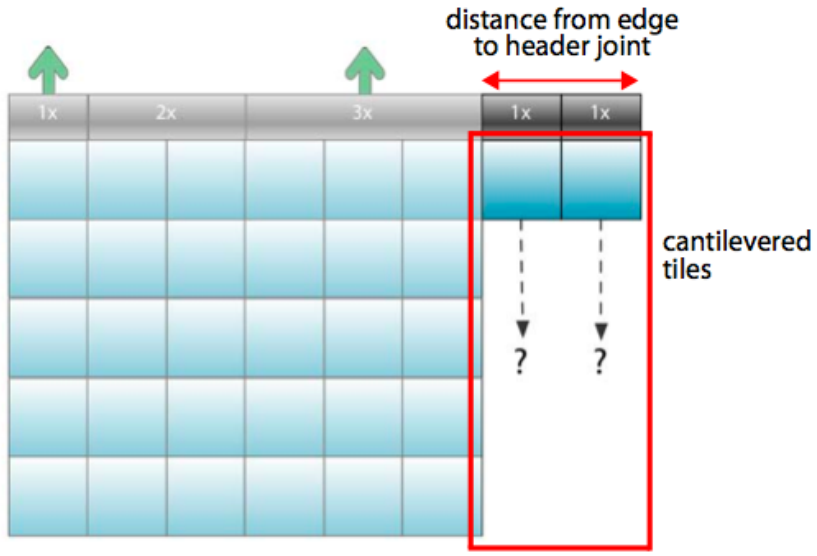
| Overall Length (in tiles) | Joint Position (counting from left end) | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| 2 | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | |
| 4 | 25 | 14 | 25 | | | | | | | | | | | | | | |
| 5 | 25 | 14 | 14 | 25 | | | | | | | | | | | | | |
| 6 | 25 | 14 | 19 | 14 | 25 | | | | | | | | | | | | |
| 7 | 25 | 14 | 25 | 25 | 14 | 25 | | | | | | | | | | | |
| 8 | 25 | 14 | 25 | 25 | 25 | 14 | 25 | | | | | | | | | | |
| 9 | 25 | 14 | 25 | 25 | 25 | 25 | 14 | 25 | | | | | | | | | |
| 10 | 25 | 14 | 25 | 14 | 11 | 14 | 25 | 14 | 25 | | | | | | | | |
| 11 | 25 | 14 | 25 | 9 | 7 | 7 | 9 | 25 | 14 | 25 | | | | | | | |
| 12 | 25 | 14 | 19 | 7 | 5 | 4 | 5 | 7 | 19 | 14 | 25 | | | | | | |
| 13 | 25 | 14 | 14 | 5 | 4 | 3 | 3 | 4 | 5 | 14 | 14 | 25 | | | | | |
| 14 | 25 | 14 | 11 | 4 | 3 | 2 | 2 | 2 | 3 | 4 | 11 | 14 | 25 | | | | |
| 15 | 25 | 14 | 9 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 9 | 14 | 25 | | | |
| 16 | 25 | 14 | 8 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 3 | 8 | 14 | 25 | | |
| 17 | 25 | 14 | 7 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 7 | 14 | 25 | |
| 18 | 25 | 14 | 6 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 6 | 14 | 25 |

## See also

Left = 1x, Right = 1x
Left = 1x, Right = 2x
Left = 1x, Right = 3x
Left = 1x, Right = 4x
Left = 2x, Right = 1x
Left = 2x, Right = 2x
Left = 2x, Right = 3x
Left = 2x, Right = 4x
Left = 3x, Right = 1x
Left = 3x, Right = 2x
Left = 3x, Right = 3x
Left = 3x, Right = 4x
Left = 4x, Right = 1x
Left = 4x, Right = 2x
Left = 4x, Right = 3x

# 2.5.2.7 Cantilever Hanging

Tiles may be cantilevered beyond the supported light duty header as shown in the illustration below.



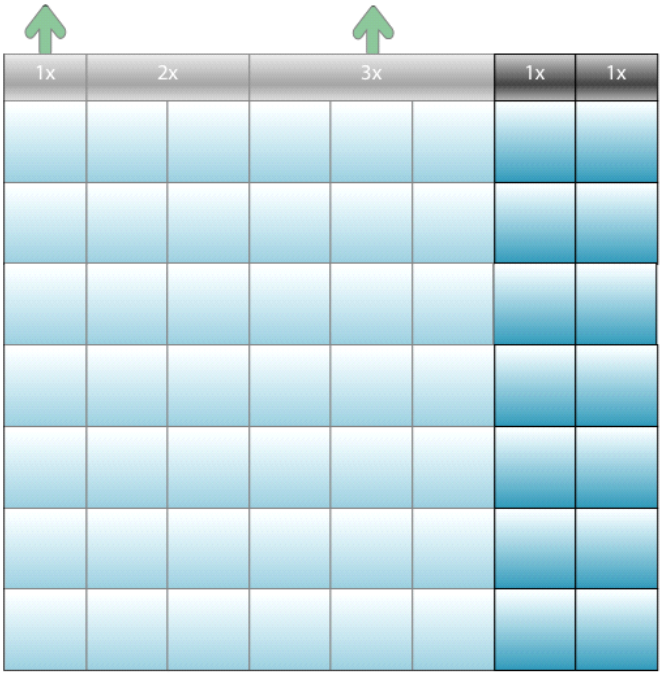

Tiles can be connected via any header width desired, but there is a limitation on the number of tiles that can be cantilevered.
Use the following chart to determine the maximum number of tiles that can be connected vertically (cantilevered).

**Cantilevered Tile Limits:**

| Distance From Edge to Header Joint (in tiles) | Maximum # of Vertical Tiles |
|---|---|
| 1 | 25 |
| 2 | 7 |
| 3 | 3 |
| 4 | 1 |
| 5 | 1 |

## Rigging Example: Cantilever

Using the example from the figure above, with two tiles cantilevered to the right edge of the display, the table above is used to calculate that 7 tiles can be hung vertically, as shown below:




## See also

2.5.2.1 Light Duty Header Detail
2.5.2.2 Light Duty Header Operation
2.5.2.3 Adjusting the Hooks on a Light Duty Header
2.5.2.4 Light Duty Hanging Options
2.5.2.5 Example: Multiple Light Duty Headers
2.5.2.6 Load Charts: Multiple Light Duty Headers
2.5.2.8 Light Duty Header Wind Speed Charts

# 2.5.2.8 Light Duty Header Wind Speed Charts

DANGER
Failure to follow these guidelines could result in personal injury and/or damage to the C-series system.

Light duty headers are primarily intended for indoor use as there is no z-axis support. However, C-series tiles can withstand a certain amount of wind loading without any additional vertical bracing installed.
If the bottom of the screen is fixed (held in place) then maximum allowable wind loading can be determined from the chart below.

**Maximum Height of a C-series Screen with No Vertical Bracing**
**Bottom of Screen in Fixed Position**

| Height (# of tiles) | Height (meters) | Wind Speed (km/hr) | Wind Speed (miles/hr) | Beaufort Scale |
|---|---|---|---|---|
| 2 | 0.8 | 164 | 102 | 12 |
| 3 | 1.2 | 110 | 68 | 11 |
| 4 | 1.6 | 82 | 51 | 9 |
| 5 | 2.0 | 66 | 41 | 8 |
| 6 | 2.4 | 55 | 34 | 7 |
| 7 | 2.8 | 47 | 29 | 6 |
| 8 | 3.2 | 41 | 26 | 6 |
| 9 | 3.6 | 37 | 23 | 5 |
| 10 | 4.0 | 33 | 20 | 5 |
| 11 | 4.4 | 30 | 19 | 5 |
| 12 | 4.8 | 27 | 17 | 4 |
| 13 | 5.2 | 25 | 16 | 4 |
| 14 | 5.6 | 23 | 15 | 4 |
| 15 | 6.0 | 22 | 14 | 4 |
| 16 | 6.4 | 21 | 13 | 4 |
| 17 | 6.8 | 19 | 12 | 3 |
| 18 | 7.2 | 18 | 11 | 3 |
| 19 | 7.6 | 17 | 11 | 3 |
| 20 | 8.0 | 16 | 10 | 3 |
| 21 | 8.4 | 16 | 10 | 3 |
| 22 | 8.8 | 15 | 9 | 3 |
| 23 | 9.2 | 14 | 9 | 3 |
| 24 | 9.6 | 14 | 9 | 3 |
| 25 | 10.0 | 13 | 8 | 3 |

See Appendix A for an explanation of the Beaufort Scale

The other alternative is to not fix the bottom of the screen, leaving it free to move.
When this method is used the header MUST be free to pivot at its mounting points (via shackle, lifting sling, etc.)
In this case, any wind loading in the z-axis will cause the bottom of the screen to swing.
The angle of the screen cam be determined by the chart below.

NOT RECOMMENDED

| Wind Speed (km/hr) | Wind Speed (miles/hr) | Angle (degrees) | Beaufort Scale |
|---|---|---|---|
| 122 | 76 | 60 | 12 |
| 104 | 65 | 55 | 11 |
| 89 | 55 | 50 | 10 |
| 78 | 48 | 45 | 9 |
| 69 | 43 | 40 | 8 |
| 61 | 38 | 35 | 7 |
| 54 | 34 | 30 | 7 |
| 47 | 29 | 25 | 6 |
| 41 | 25 | 20 | 6 |
| 35 | 22 | 15 | 5 |
| 28 | 17 | 10 | 4 |
| 19 | 12 | 5 | 3 |
| 17 | 11 | 4 | 3 |
| 15 | 9 | 3 | 3 |
| 12 | 7 | 2 | 2 |
| 9 | 6 | 1 | 2 |
| 0 | 0 | 0 | 0 |

## See also

2.5.2.1 Light Duty Header Detail
2.5.2.2 Light Duty Header Operation
2.5.2.3 Adjusting the Hooks on a Light Duty Header
2.5.2.4 Light Duty Hanging Options
2.5.2.5 Example: Multiple Light Duty Headers
2.5.2.6 Load Charts: Multiple Light Duty Headers
2.5.2.7 Cantilever Hanging

# 2.5.3 Heavy Duty Hanging

C-series tiles must be suspended within specific guidelines to ensure proper loading.
The charts and tables in this chapter provide the maximum number of tiles that can be suspended using the heavy duty header.
See Assembly and Mounting Basics for additional information.

## Heavy Duty Header Types

| Name | Part # | # Panels / Header Horiz | Max Panels Horiz | Max Panels Vert | Other Info |
|---|---|---|---|---|---|
| 1x HD Header | 430-0149 | 1 | modular | 25 | Horizontal curve possible when multiple headers are placed together. |
| 2x HD Header | 430-0202 | 2 | modular | 25 | Horizontal curve possible when multiple headers are placed together. |
| 3x HD Header | 430-0203 | 3 | modular | 25 | Horizontal curve possible when multiple headers are placed together. |
| 4x HD Header | 430-0204 | 4 | modular | 25 | Horizontal curve possible when multiple headers are placed together. |

Heavy Duty Header Detail
Heavy Duty Header Operation
Wind Speed Calculations

DANGER

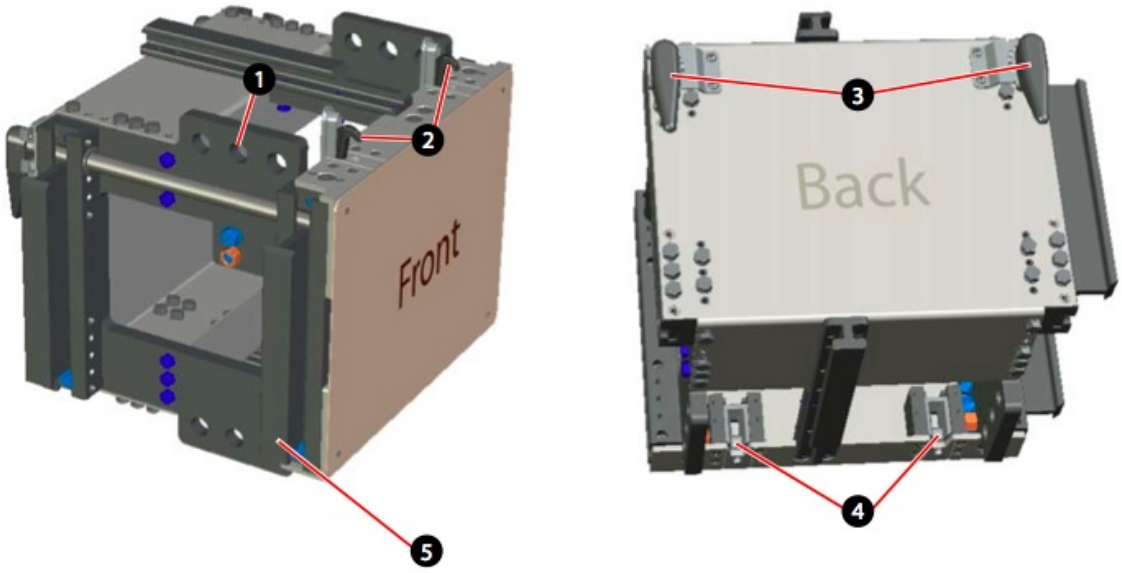
Do not hang more than 25 panels (10 m) tall with the integral rigging hardware.
No lifting point should support more than 100 tiles (1411 lb / 640 kg).
Failure to equalize the load among all pickup points could result in serious injury.

## See also

2.5.1 Stacked C-series Tiles

2.5.2 Light Duty Hanging

# 2.5.3.1 Heavy Duty Header Detail




1 Lifting Eyes - Multiple mounting points with 25 mm hole (3/4” shackle) available on top and bottom.
2 Latch Hooks - Hooks to lock C-series tiles to top of header.
3 Locking Handles - Locks the joiner in place.
4 Latch Catches - Sockets for locking C-series panels to bottom of header.
5 Joiners - Integral joiners for connecting other headers, vertical braces, or footers.

## See also

2.5.3.2 Heavy Duty Header Operation
2.5.3.3 Load Charts: Heavy Duty Headers

# 2.5.3.2 Heavy Duty Header Operation

TBD

## See also

2.5.3.1 Heavy Duty Header Detail
2.5.3.3 Load Charts: Heavy Duty Headers

# 2.5.3.3 Load Charts: Heavy Duty Headers

To calculate the requirements for heavy duty headers the following information is needed:

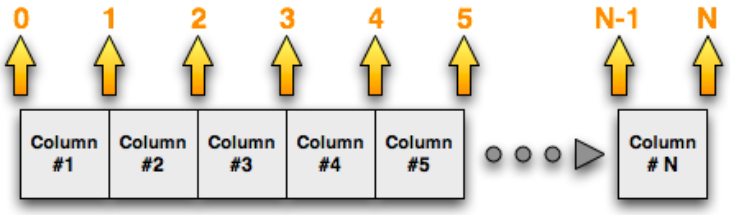
- Maximum wind speed
- Number of mount points
- Width of the C-series display

Using this data and the following charts you can determine:

- Recommended spacing for vertical braces
- Recommend location of mount points
- Maximum height of the C-series display

## Mounting Points

Heavy duty headers have a mounting point located at the joint between every column of tiles.
For calculation purposes in this manual they are numbered starting from "0" at the left-hand side of the first column to "N" at the right-hand side of the Nth column:




## Vertical Braces

When used with a heavy duty header, the vertical braces support against wind loading in the z-axis.
Vertical braces also support the weight of the ballast header at the bottom of the screen.
Vertical braces do *not* support the weight of the C-series tiles themselves, because the center mount studs on the vertical braces are free to slide up and down on the vertical braces.

Based on the maximum expected wind speed, use the chart below to determine the recommended spacing of vertical braces on the back of the screen:

| Beaufort Scale | Wind Speed (km/hr) | Wind Speed (miles/hr) | Vertical Brace Spacing |
|---|---|---|---|
| 12 | ≥ 118 | ≥ 73 | 1 every 2 columns |
| 11 | 103 – 117 | 64 – 72 | 1 every 2 columns |
| 10 | 89 – 102 | 55 – 63 | 1 every 2 columns |
| 9 | 75 – 88 | 47 – 54 | 1 every 3 columns |
| 8 | 62 – 74 | 39 – 46 | 1 every 3 columns |
| 7 | 50 – 61 | 31 – 38 | 1 every 4 columns |
| 6 | 39 – 49 | 25 – 30 | 1 every 5 columns |
| 5 | 29 – 38 | 18 – 24 | 1 every 6 columns |
| 4 | 20 – 28 | 13 – 17 | 1 every 9 columns |
| 3 | 12 – 19 | 8 – 12 | 1 every 13 columns |
| 2 | 5.6 – 11 | 4 – 7 | 1 every 20 columns |
| 1 | 1.1 – 5.5 | 1 – 3 | 1 every 40 columns |
| 0 | < 1 | < 1 | 2 total, one on each end |

See Appendix A for an explanation of the Beaufort Scale

Next, go to the appropriate chart based on the number of pickup points for the header(s):

Heavy Duty Header Load Chart - 2 Pickup Points
Heavy Duty Header Load Chart - 3 Pickup Points
Heavy Duty Header Load Chart - 4 Pickup Points
Heavy Duty Header Load Chart - 5 Pickup Points
Heavy Duty Header Load Chart - 6 Pickup Points

## See also

2.5.3.1 Heavy Duty Header Detail
2.5.3.2 Heavy Duty Header Operation

# Heavy Duty Header Load Chart - 2 Pickup Points

Use this chart only if you are suspending the display by two mounting points.

1. Locate the screen width in the first column
2. Locate intended mount points in columns two and three to determine the required mount point locations on the heavy duty header(s)[1]
3. Go across to the column under the maximum desired wind speed[2] to determine the maximum allowable height of the screen
    1. If the maximum height number is black, the pickup points are <1,000 kg each
    2. If the maximum height number is blue, the pickup points are >1,000 kg but <2,000 kg each
    3. If the maximum height number is red, the pickup points are >2,000 kg each

    Note: The weight calculations are based on a worse case scenario where the header is comprised of 1x units.

| Screen Width ( # of tiles) | Pickup Point Locations | | Max Height (# of tiles) @ Beaufort Scale = | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12[3] |
| 2 | 0 | 2 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 3 | 0 | 3 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 4 | 0 | 4 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 5 | 0 | 5 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 6 | 0 | 6 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 7 | 0 | 7 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 8 | 1 | 7 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 9 | 1 | 8 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 10 | 2 | 8 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 11 | 2 | 9 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 12 | 2 | 10 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 13 | 3 | 10 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 14 | 3 | 11 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 15 | 3 | 12 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 16 | 3 | 13 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 21 | 18 |
| 17 | 4 | 13 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 21 | 18 |
| 18 | 4 | 14 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 21 | 18 |
| 19 | 4 | 15 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 21 | 18 |
| 20 | 4 | 16 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 22 | 19 | 17 | 14 |
| 21 | 5 | 16 | 25 | 25 | 25 | 24 | 24 | 23 | 23 | 21 | 19 | 17 | 15 | 13 | 11 |
| 22 | 5 | 17 | 25 | 25 | 25 | 24 | 24 | 23 | 23 | 21 | 19 | 17 | 15 | 13 | 11 |
| 23 | 5 | 18 | 25 | 25 | 25 | 24 | 24 | 23 | 23 | 21 | 19 | 17 | 15 | 13 | 11 |
| 24 | 5 | 19 | 25 | 25 | 25 | 24 | 24 | 23 | 23 | 21 | 19 | 17 | 15 | 13 | 11 |
| 25 | 5 | 20 | 20 | 19 | 19 | 19 | 18 | 17 | 17 | 16 | 14 | 13 | 11 | 10 | 8 |
| 26 | 6 | 20 | 16 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 12 | 11 | 9 | 8 | 7 |
| 27 | 6 | 21 | 16 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 12 | 11 | 9 | 8 | 7 |
| 28 | 6 | 22 | 16 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 12 | 11 | 9 | 8 | 7 |
| 29 | 6 | 23 | 16 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 12 | 11 | 9 | 8 | 7 |
| 30 | 6 | 24 | 12 | 12 | 11 | 11 | 11 | 10 | 10 | 10 | 9 | 8 | 7 | 6 | 5 |
| 31 | 7 | 24 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 6 | 5 | 5 |
| 32 | 7 | 25 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 6 | 5 | 5 |
| 33 | 7 | 26 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 6 | 5 | 5 |
| 34 | 7 | 27 | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 8 | 7 | 7 | 6 | 5 | 4 |
| 35 | 7 | 28 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 5 | 5 | 4 | 4 | 3 |
| 36 | 8 | 28 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 3 | 3 |
| 37 | 8 | 29 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 3 | 3 |
| 38 | 8 | 30 | 7 | 7 | 6 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 4 | 3 | 3 |
| 39 | 8 | 31 | 6 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 4 | 4 | 3 | 3 | 3 |
| 40 | 8 | 32 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 2 | 2 | 2 |

1. Heavy Duty Headers have pickup points located between each column of tiles, starting with #0 to the left of the first tile and ending with #N to the right of the N$^{th}$ tile. See Pickup Points for detail.
2. See Appendix A for an explanation of the Beaufort Scale
3. Values in the column "Beaufort Scale = 12" are calculated at a 133 km/h wind speed.

## See also

Heavy Duty Header Load Chart - 3 Pickup Points
Heavy Duty Header Load Chart - 4 Pickup Points
Heavy Duty Header Load Chart - 5 Pickup Points
Heavy Duty Header Load Chart - 6 Pickup Points

# Heavy Duty Header Load Chart - 3 Pickup Points

Use this chart only if you are picking up the Heavy Duty Headers by three (3) pickup points.

To use the chart:

1. Locate your screen width in the first column
2. Go across to columns 2 through 4 to determine the required pickup point locations on the Heavy Duty Header(s)[1]
3. Go across to the column under the maximum desired wind speed[2] to determine the maximum allowable height of the screen
    1. If the Max Height number is black, the pickup points are <1,000 kg each
    2. If the Max Height number is blue, the pickup points are >1,000 kg but <2,000 kg each
    3. If the Max Height number is red, the pickup points are >2,000 kg each

    Note: The weight calculations are based on a worse case scenario where the header is comprised of 1x units.

| Screen Width ( # of tiles) | Pickup Point Locations | | | Max Height (# of tiles) @ Beaufort Scale = | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12[3] |
| 10 | 0 | 5 | 10 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 11 | 0 | 5 | 11 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 12 | 0 | 6 | 12 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 13 | 0 | 6 | 13 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 14 | 0 | 7 | 14 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 |
| 15 | 1 | 7 | 14 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 16 | 1 | 8 | 15 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 17 | 2 | 8 | 15 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 18 | 2 | 9 | 16 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 19 | 2 | 9 | 17 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 |
| 20 | 3 | 10 | 17 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 21 | 3 | 10 | 18 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 22 | 3 | 11 | 19 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| 23 | 3 | 11 | 20 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 21 |
| 24 | 3 | 12 | 21 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 22 | 19 |
| 25 | 4 | 12 | 21 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 21 | 18 |
| 26 | 4 | 13 | 22 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 21 | 18 |
| 27 | 4 | 13 | 23 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 21 | 18 |
| 28 | 4 | 14 | 24 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 23 | 20 | 17 |
| 29 | 4 | 14 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 23 | 19 | 17 | 14 |
| 30 | 4 | 15 | 26 | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 24 | 22 | 20 | 17 | 15 | 13 |
| 31 | 4 | 15 | 27 | 25 | 25 | 25 | 24 | 24 | 23 | 22 | 20 | 19 | 17 | 14 | 13 | 11 |
| 32 | 5 | 16 | 27 | 25 | 25 | 25 | 24 | 24 | 23 | 22 | 21 | 19 | 17 | 15 | 13 | 11 |
| 33 | 5 | 16 | 28 | 25 | 25 | 25 | 24 | 24 | 23 | 22 | 21 | 19 | 17 | 15 | 13 | 11 |
| 34 | 5 | 17 | 29 | 25 | 25 | 25 | 24 | 24 | 23 | 22 | 21 | 19 | 17 | 15 | 13 | 11 |
| 35 | 5 | 17 | 30 | 24 | 23 | 23 | 22 | 22 | 21 | 20 | 19 | 17 | 16 | 13 | 12 | 10 |
| 36 | 5 | 18 | 31 | 21 | 20 | 20 | 20 | 19 | 18 | 18 | 17 | 15 | 14 | 12 | 10 | 9 |
| 37 | 5 | 18 | 32 | 18 | 18 | 17 | 17 | 17 | 16 | 15 | 14 | 13 | 12 | 10 | 9 | 8 |
| 38 | 5 | 19 | 33 | 16 | 16 | 15 | 15 | 15 | 14 | 14 | 13 | 12 | 11 | 9 | 8 | 7 |
| 39 | 6 | 19 | 33 | 16 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 12 | 11 | 9 | 8 | 7 |
| 40 | 6 | 20 | 34 | 16 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 12 | 11 | 9 | 8 | 7 |
| 41 | 6 | 20 | 35 | 16 | 16 | 16 | 15 | 15 | 14 | 14 | 13 | 12 | 11 | 9 | 8 | 7 |
| 42 | 6 | 21 | 36 | 15 | 15 | 14 | 14 | 14 | 13 | 13 | 12 | 11 | 10 | 9 | 8 | 7 |
| 43 | 6 | 21 | 37 | 13 | 13 | 13 | 12 | 12 | 11 | 11 | 10 | 9 | 9 | 7 | 7 | 6 |
| 44 | 6 | 22 | 38 | 11 | 11 | 11 | 11 | 11 | 10 | 10 | 9 | 8 | 8 | 7 | 6 | 5 |
| 45 | 6 | 22 | 39 | 10 | 10 | 10 | 9 | 9 | 9 | 9 | 8 | 7 | 7 | 6 | 5 | 4 |
| 46 | 7 | 23 | 39 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 6 | 5 | 5 |
| 47 | 7 | 23 | 40 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 6 | 5 | 5 |
| 48 | 7 | 24 | 41 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 8 | 8 | 7 | 6 | 5 | 5 |
| 49 | 7 | 24 | 42 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 7 | 6 | 5 | 5 | 4 |
| 50 | 7 | 25 | 43 | 8 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 6 | 6 | 5 | 4 | 4 |

1. Heavy Duty Headers have pickup points located between each column of tiles, starting with #0 to the left of the first tile and ending with #N to the right of the N$^{th}$ tile. See Pickup Points for detail.
2. See Appendix A for an explanation of the Beaufort Scale

3. Values in the column "Beaufort Scale = 12" are calculated at a 133 km/h wind speed.

## See also

Heavy Duty Header Load Chart - 2 Pickup Points
Heavy Duty Header Load Chart - 4 Pickup Points
Heavy Duty Header Load Chart - 5 Pickup Points
Heavy Duty Header Load Chart - 6 Pickup Points

# Heavy Duty Header Load Chart - 4 Pickup Points

Use this chart only if you are picking up the Heavy Duty Headers by four (4) pickup points.

To use the chart:

1. Locate your screen width in the first column
2. Go across to columns 2 through 5 to determine the required pickup point locations on the Heavy Duty Header(s)[1]
3. Go across to the column under the maximum desired wind speed[2] to determine the maximum allowable height of the screen

insert chart here

1. Heavy Duty Headers have pickup points located between each column of tiles, starting with #0 to the left of the first tile and ending with #N to the right of the Nth tile.
2. See Appendix A for an explanation of the Beaufort Scale

## See also

Heavy Duty Header Load Chart - 2 Pickup Points
Heavy Duty Header Load Chart - 3 Pickup Points
Heavy Duty Header Load Chart - 5 Pickup Points
Heavy Duty Header Load Chart - 6 Pickup Points

# Heavy Duty Header Load Chart - 5 Pickup Points

Use this chart only if you are picking up the Heavy Duty Headers by five (5) pickup points.

To use the chart:

1. Locate your screen width in the first column
2. Go across to columns 2 through 6 to determine the required pickup point locations on the Heavy Duty Header(s)[1]
3. Go across to the column under the maximum desired wind speed[2] to determine the maximum allowable height of the screen

insert chart here

1. Heavy Duty Headers have pickup points located between each column of tiles, starting with #0 to the left of the first tile and ending with #N to the right of the Nth tile.
2. See Appendix A for an explanation of the Beaufort Scale

## See also

Heavy Duty Header Load Chart - 2 Pickup Points
Heavy Duty Header Load Chart - 3 Pickup Points
Heavy Duty Header Load Chart - 4 Pickup Points
Heavy Duty Header Load Chart - 6 Pickup Points

# Heavy Duty Header Load Chart - 6 Pickup Points

Use this chart only if you are picking up the Heavy Duty Headers by six (6) pickup points.

To use the chart:

1. Locate your screen width in the first column
2. Go across to columns 2 through 7 to determine the required pickup point locations on the Heavy Duty Header(s)[1]
3. Go across to the column under the maximum desired wind speed[2] to determine the maximum allowable height of the screen

insert chart here

1. Heavy Duty Headers have pickup points located between each column of tiles, starting with #0 to the left of the first tile and ending with #N to the right of the Nth tile.
2. See Appendix A for an explanation of the Beaufort Scale

## See also

Heavy Duty Header Load Chart - 2 Pickup Points
Heavy Duty Header Load Chart - 3 Pickup Points
Heavy Duty Header Load Chart - 4 Pickup Points
Heavy Duty Header Load Chart - 5 Pickup Points

# 2.6 C-series Tile Appendices

A: Beaufort Scale

## See also

2.1 Safety & Installation Guidlines
2.2 System Overview
2.3 Power & Data Distribution
2.4 Assembly & Mounting
2.5 Rigging Hardware & Methods

# Appendix A: Beaufort Scale

The following table is used as a reference for wind speed calculations throughout this guide.[1]

| Beaufort Scale | Wind Speed (km/hr) | Wind Speed (miles/hr) | Wind Conditions |
|---|---|---|---|
| 12 | ≥ 118 | ≥ 73 | Very widespread damage to vegetation. Some windows may break; mobile homes and poorly constructed sheds and barns are damaged. Debris may be hurled about. |
| 11 | 103 – 117 | 64 – 72 | Widespread damage to vegetation. Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely. |
| 10 | 89 – 102 | 55 – 63 | Trees are broken off or uprooted, saplings bent and deformed. Poorly attached asphalt shingles and shingles in poor condition peel off roofs. |
| 9 | 75 – 88 | 47 – 54 | Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over. Damage to circus tents and canopies. |
| 8 | 62 – 74 | 39 – 46 | Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded. |
| 7 | 50 – 61 | 31 – 38 | Whole trees in motion. Effort needed to walk against the wind. Swaying of skyscrapers may be felt, especially by people on upper floors. |
| 6 | 39 – 49 | 25 – 30 | Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic garbage cans tip over. |
| 5 | 29 – 38 | 18 – 24 | Branches of a moderate size move. Small trees begin to sway. |
| 4 | 20 – 28 | 13 – 17 | Dust and loose paper raised. Small branches begin to move. |
| 3 | 12 – 19 | 8 – 12 | Leaves and smaller twigs in constant motion. |
| 2 | 5.6 – 11 | 4 – 7 | Wind felt on exposed skin. Leaves rustle. |
| 1 | 1.1 – 5.5 | 1 – 3 | Wind motion visible in smoke. |
| 0 | < 1 | < 1 | Calm. Smoke rises vertically. |

1. Beaufort scale, http://en.wikipedia.org/w/index.php?title=Beaufort_scale&oldid=303100822 (last visited July 20, 2009).
2. The names "storm" and "hurricane" on the Beaufort scale refer only to wind strength, and do not necessarily mean that other severe weather (for instance, a thunderstorm or tropical cyclone) is present.
   To avoid confusion, strong wind warnings will often speak of e.g. "hurricane-force winds".

## See also

# 3. Helix P1 Manual

3.1 Safety & Installation Guidelines
3.2 Helix System Overview
3.3 Power & Data Distribution
3.4 Helix P1 Assembly & Mounting

## See also

Online Help System
2. C-series Tile Manual
4. Vizomo User Guide
5. PDB-5 Manual
6. RasterMAPPER User Guide
7. PXL System Online Help Notes
Site Index

# 3.1 Safety & Installation Guidelines

WARNING

Read the installation instructions before connecting the system to the power source.
Attention: Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.
Warnung: Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

WARNING

The panels shall be mounted 15-20 meter from the viewing place, depending on the configuration.
Lamp may pose a hazard even for momentary or brief exposure. Remove power before servicing. No servicing or maintenance with power to the LEDs switched on.

## Safety Guidelines for Human Eyes

WARNING

Use caution when viewing LEDs directly if driven at high current, which may greatly increase the hazard to your eyes. (IEC62471)

## Installation Guidelines

- Helix P1 pixel strings have an IP66 rating and are suitable for use in most indoor and outdoor installations except where water immersion could occur. This conforms to the International Electrotechnical Commission (IEC) standard 60529.
- Helix  PXL Node Boxes have an IP65 rating and are suitable for use in most indoor and outdoor installations except where water immersion could occur. This conforms to the International Electrotechnical Commission (IEC) standard 60529.

## Power Guidelines

DANGER

Risk of electrical shock. No user-serviceable parts inside.
Observe all applicable electrical codes.
The power outlet shall be installed near the equipment and shall be easily accessible.
Do not hot plug any cables. Damage to the connector pins may occur. Resulting damage is not covered under warranty.

Observe the following power guidelines when setting up your Helix P1 display:

Max current draw of one PXL Node with four (4) P1 pixels strings is 0.5A @ 200-240VAC 50/60Hz.
Maximum # of PXL Nodes per PDB-5 output = 20
Maximum # of PXL Nodes per PDB-5* w/ 1 x 16A input = 32
Maximum # of PXL Nodes per PDB-5* w/ 2 x 16A input = 64

* PDB-5 has 32A limit (2x 16A).

When running typical video content, the duty cycle (average power consumption) is about 30% of maximum.

## Temperature

Helix installations must take into account the operating temperature of the PXL Nodes. The ambient operating temperature for a PXL Node is -20°C to 45°C.

---

**NOTE**
Helix PXL Nodes have an internal temperature sensor that shuts down the output (brightness is set to 0) when internal temperature is too high. The brightness will return to normal when the internal temperature has cooled sufficiently.

---

## See also

3.2 Helix System Overview
3.3 Power & Data Distribution
3.4 Helix P1 Assembly & Mounting

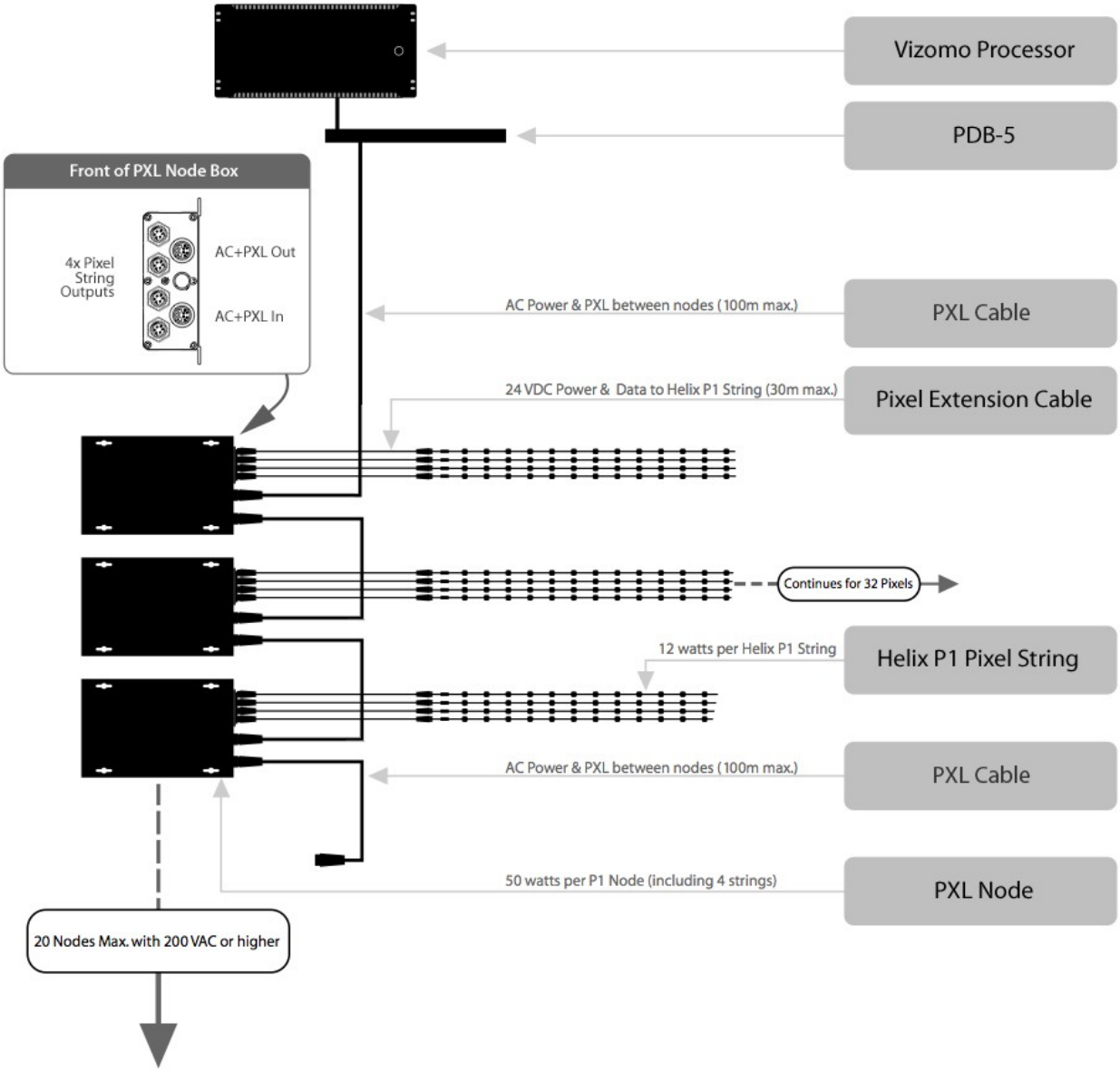
# 3.2 Helix System Overview

3.2.1 Basic System Info
3.2.2 Helix P1 Pixel String Overview
3.2.3 PXL Node Box Overview

## See also

3.1 Safety & Installation Guidelines
3.3 Power & Data Distribution
3.4 Helix P1 Assembly & Mounting

# 3.2.1 Basic System Info


Vizomo Processor
PDB-5
Front of PXL Node Box
4x Pixel String Outputs
AC+PXL Out
AC+PXL In
AC Power & PXL between nodes (100m max.)
PXL Cable
24 VDC Power & Data to Helix P1 String (30m max.)
Pixel Extension Cable
Continues for 32 Pixels
12 watts per Helix P1 String
Helix P1 Pixel String
AC Power & PXL between nodes (100m max.)
PXL Cable
50 watts per P1 Node (including 4 strings)
PXL Node
20 Nodes Max. with 200 VAC or higher

**See also**

3.2.2 Helix P1 Pixel String Overview
3.2.3 PXL Node Box Overview

# 3.2.2 Helix P1 Pixel String Overview

Each Helix P1 pixel string has three parts:

1. Input Connector - this connects to the outputs on a PXL Node Box
2. Pixel Zero - a small power and data converter
3. 32 Pixels - 75mm or 150mm spacing

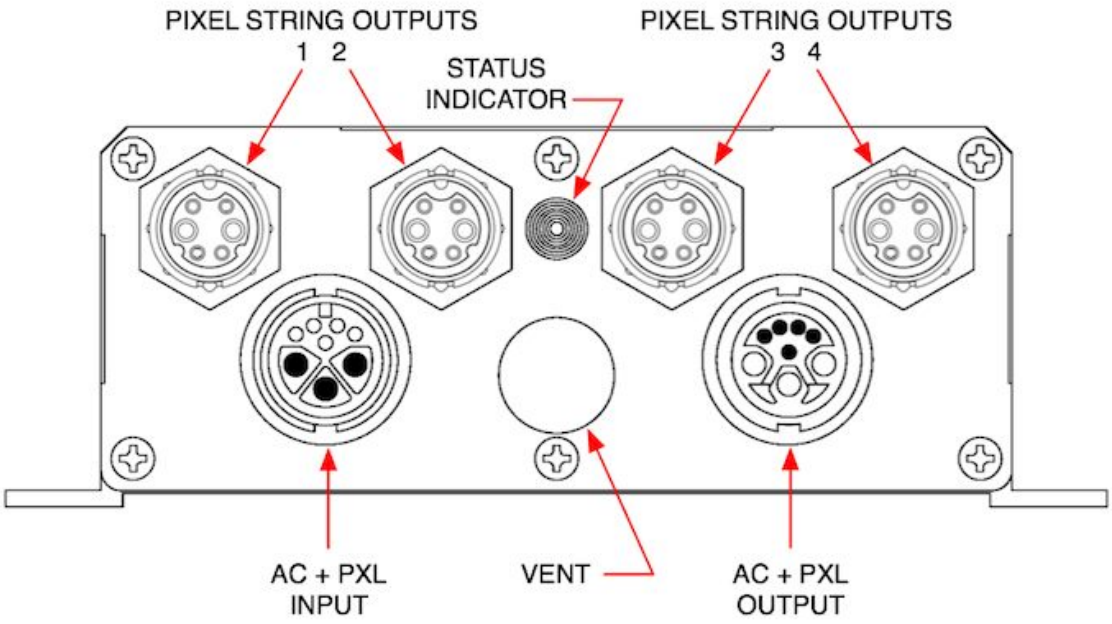
## See also

3.2.1 Basic System Info
3.2.3 PXL Node Box Overview

# 3.2.3 PXL Node Box Overview

The PXL Node Box takes AC power and PXL data in, converts this to 24VDC and data out to four strings, and passes AC power and PXL data through to the next PXL Node Box.

All connections are on one end panel of the box:




1. AC + PXL INPUT - black body - This uses the standard PXL Cable Connector.
2. AC + PXL OUTPUT - white body - This uses the standard PXL Cable Connector.
3. PIXEL STRING OUTPUTS - Four independent outputs, each can feed one P1 pixel string
4. STATUS INDICATOR - Multicolor LED indicator
5. VENT - IP65 gas-permeable microporous membrane vent

## See also

3.2.1 Basic System Info
3.2.2 Helix P1 Pixel String Overview

# 3.3 Power & Data Distribution

3.3.1 Power & Data Overivew
3.3.2 Power Input
3.3.3 PXL Node Status Indicator
3.3.4 PXL Cable & Connectors
3.3.5 Pixel Extension Cables

## See also

3.1 Safety & Installation Guidelines
3.2 Helix System Overview
3.4 Helix P1 Assembly & Mounting

# 3.3.1 Power & Data Overivew

The PDB-5 handles the power and data distribution for Helix P1 systems. All power & data cabling between the PDB-5 and PXL Node Boxes is done through integrated, cabling with color-coded male or female connectors.

Alternative installations without a PDB-5 can make use of a break-in cable which accepts AC power and Ethernet data connections (P/N 350-0660).

Connectors on the front of a PXL Node Box are color-coded as follows:

- Black Connector = Power & Data In
- White Connector = Power & Data Out

The connectors on the cables are also color-coded, so it's easy to connect black to black, and white to white.

## See also

3.3.2 Power Input
3.3.3 PXL Node Status Indicator
3.3.4 PXL Cable & Connectors
3.3.5 Pixel Extension Cables

# 3.3.2 Power Input

Each PDB-5 has 2x 16 amp inputs and 6x 10 amp outputs with breakers for AC power distribution.
The limit for each PDB-5 output is 10A, with a total output of 32A maximum per PDB-5.
Refer to the PDB-5 User's Guide for more information.

Observe the following power guidelines when setting up your Helix P1 display:

Max current draw of one PXL Node with four (4) P1 pixels strings is 0.5A @ 200-240VAC 50/60Hz.
Maximum # of PXL Nodes per PDB-5 output = 20
Maximum # of PXL Nodes per PDB-5* w/ 1 x 16A input = 32
Maximum # of PXL Nodes per PDB-5* w/ 2 x 16A input = 64

* PDB-5 has 32A limit (2x 16A).

When running typical video content, the duty cycle (average power consumption) is about 30% of maximum.

WARNING

Do not hot plug any cables. Damage to the connector pins may occur. Resulting damage is not covered under warranty.

## See also

3.3.1 Power & Data Overivew
3.3.3 PXL Node Status Indicator
3.3.4 PXL Cable & Connectors
3.3.5 Pixel Extension Cables

# 3.3.3 PXL Node Status Indicator

The status indicator located on the front of the PXL Node Box allows you to instantly see the status of the Node:

| | | |
|---|---|---|
| | Off | No Power (Note: the status indicator remains black for a few seconds when the PXL Node Box is first powered on) |
| | White | PXL Node Box powering up |
| | Magenta | PXL Node Box booted |
| | Orange | Top or bottom data link working properly |
| | Blue | Both data links working properly |
| | Green | Video data is being received |
| | Flashing Red | Error |

## See also

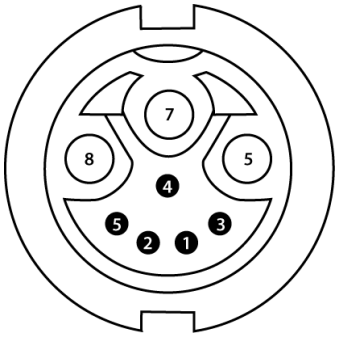
3.3.1 Power & Data Overivew
3.3.2 Power Input
3.3.4 PXL Cable & Connectors
3.3.5 Pixel Extension Cables

# 3.3.4 PXL Cable & Connectors

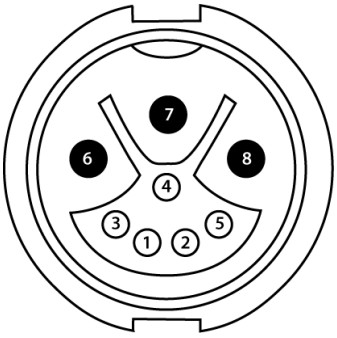
## PXL Cable Pinouts

The following is the pinout information for the combined power and data cabling used in a PXL system. The sex of the connector is determined by the power pins (the 3 largest pins).

Power / Data Cable Female:



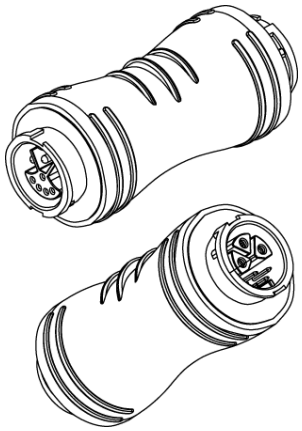

Power / Data Cable Male:



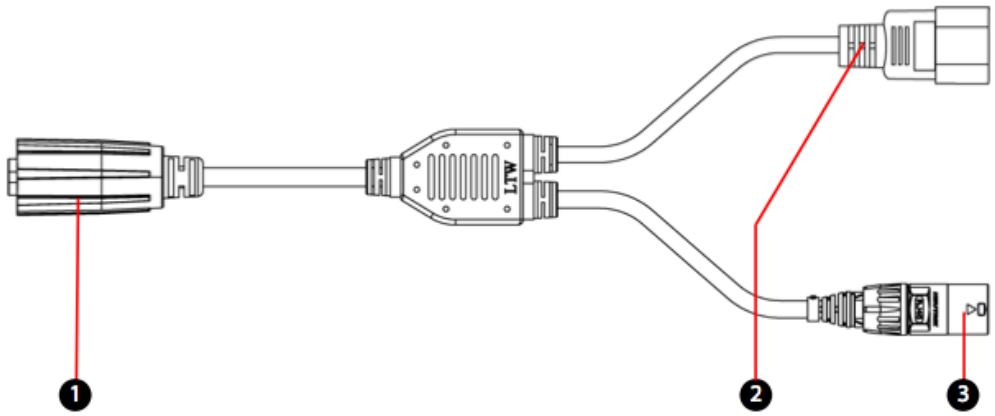

| PIN | COLOR | FUNCTION |
|---|---|---|
| 1 | Orange / White | Data TX+ |
| 2 | Blue / White | Data RX+ |
| 3 | Orange | Data TX- |
| 4 | Shield | Drain |
| 5 | Blue | Data RX- |
| 6 | Brown | AC Power - Phase |
| 7 | Green / Yellow | AC Power - Earth Ground |
| 8 | Blue | AC Power - Neutral |

## PXL Cable Couplers

Male - Female Coupler (p/n 656-0500)
The male-female coupler can be used to extend the length of a PXL cable.

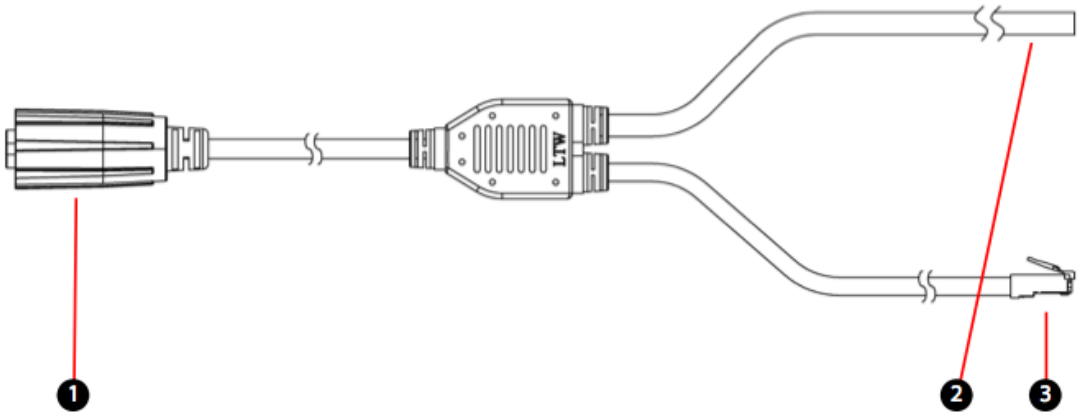


## Break-In Cable - Standard (p/n 350-0660)



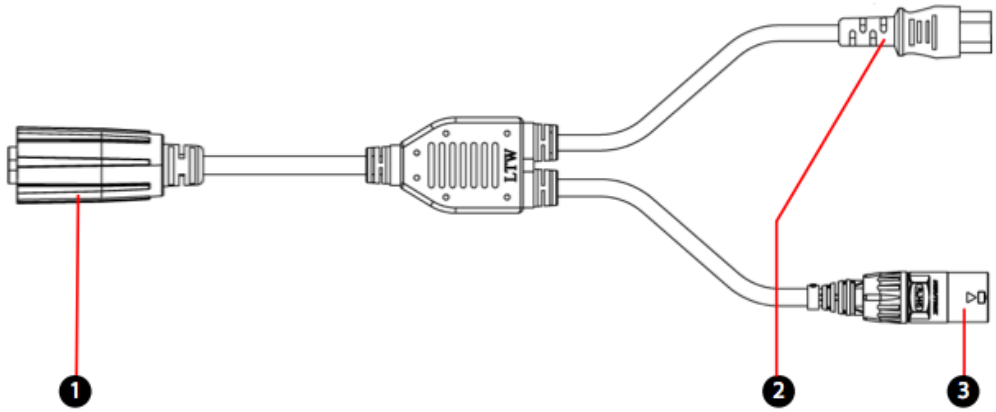

1 Power and Data Output (Female) - Combined power and data connector via proprietary PXL Cable connector.
2 Power Input - AC power input via IEC male connector.
3 Data Input - PXL data input via Neutrik EtherCon (RJ45) connector.

## Break-In Cable - long - hard wire (p/n 350-0675)



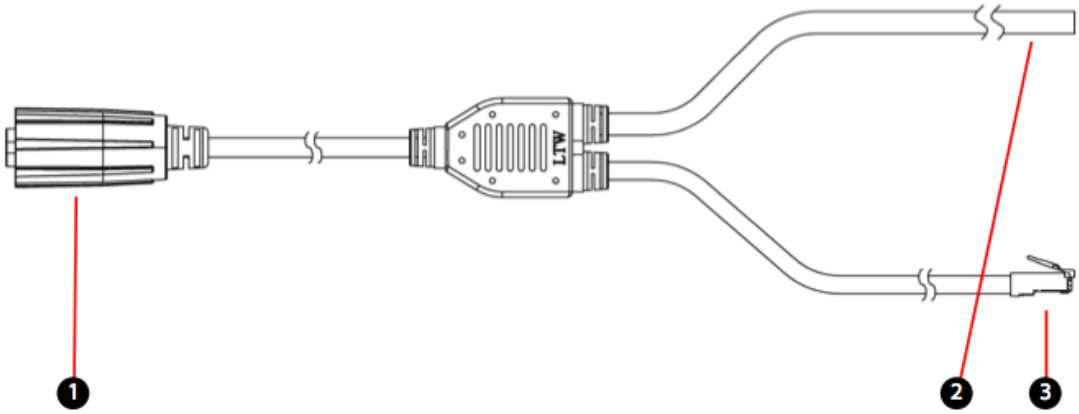

1 Power and Data Output (Female) - Combined power and data connector via proprietary PXL Cable connector.
2 Power Input - AC power input to be hardwired in fixed installations.
3 Data Input - PXL data input via Ethernet (RJ45) connector.

## Break-Out Cable - Standard (p/n 350-0675)




1 Power and Data Input (Male) - Combined power and data connector via proprietary PXL Cable connector.
2 Power Output - AC power input via IEC female connector.
3 Data Output - PXL data output via Neutrik EtherCon (RJ45) connector.

## Break-Out Cable - long - hard wire (p/n 350-0678)




1 Power and Data Input (Male) - Combined power and data connector via proprietary PXL Cable connector.
2 Power Output - AC power input via IEC female connector.
3 Data Output - PXL data output via Neutrik EtherCon (RJ45) connector.

## See also

3.3.1 Power & Data Overivew
3.3.2 Power Input
3.3.3 PXL Node Status Indicator
3.3.5 Pixel Extension Cables

# 3.3.5 Pixel Extension Cables

Helix P1 pixel strings can be located remotely from the PXL Node Box by using a Pixel Extension Cable.

These are available in four lengths and can be combined together.

Do not exceed 30m in total length from the PXL Node Box to the pixel string.

| Part Number | Name |
|---|---|
| 350-0654 | Helix P1 Extension Cable - 1m |
| 350-0490 | Helix P1 Extension Cable - 3m |
| 350-0491 | Helix P1 Extension Cable - 10m |
| 350-0636 | Helix P1 Extension Cable - 30m |

## See also

3.3.1 Power & Data Overivew
3.3.2 Power Input
3.3.3 PXL Node Status Indicator
3.3.4 PXL Cable & Connectors

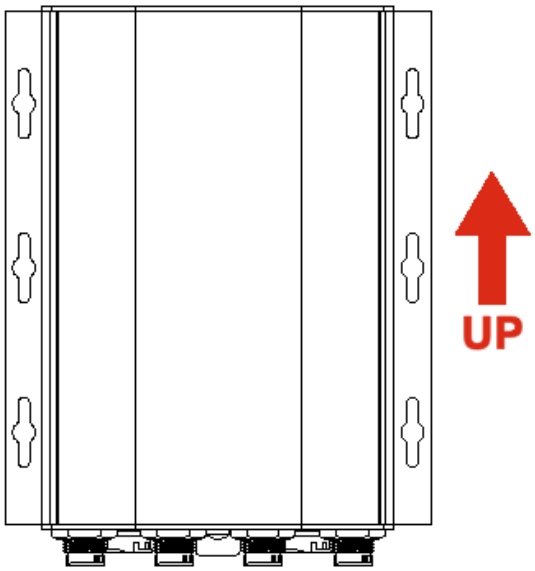
# 3.4 Helix P1 Assembly & Mounting

## PXL Node Box Mounting

The PXL Node Box has six double-ended keyhole slots for mounting.
The center hole is 8.5mm in diameter
The slots are 4.5mm in diameter

When used indoors the PXL Node Box may be mounted in any orientation.

When used outdoors, or in any wet location, the PXL Node Box must be mounted with the connectors facing down, as follows:




The membrane vent located on the connector panel is rated for IP65 (all other components of the enclosure are rated for IP66 or better).
The vent will withstand standing water (up to IP67) for 30 minutes, so for continuous use in an outdoor or wet environment the box must me mounted so the connectors and membrane vent are facing down. This will prohibit and liquid water from pooling on or around the vent.

## P1 Pixel String Mounting

The pixel strings are rated IP66 and can be mounted in any orientation, both indoors and outdoors.

Follow the following safety guidelines when mounting the strings:

- Do not flex the cable beyond its minimum bend radius of 10mm
- Do not flex the cable near the entry to the plastic pixel housing
- Do not deform the cable with mounting hardware
- If using a cable staple, use an insulated plastic version, like this:

NOT this:

- Do not puncture the cable or the pixel housing

## See also

3.1 Safety & Installation Guidelines
3.2 Helix System Overview
3.3 Power & Data Distribution

# 4. Vizomo User Guide

4.1 Vizomo Quick Start
4.2 General Overview
4.3 Configuration
4.4 Operation
4.5 Vizomo Appendices

## See also

Online Help System
2. C-series Tile Manual
3. Helix P1 Manual
5. PDB-5 Manual
6. RasterMAPPER User Guide
7. PXL System Online Help Notes
Site Index

# 4.1 Vizomo Quick Start

This chapter is divided into the following sections:

4.1.1 Installing Vizomo Controller
4.1.2 Connecting to a Processor
4.1.3 Upgrading Vizomo
4.1.4 Mapping

Refer to subsequent chapters of this manual for more detailed information.

## See also

4.2 General Overview
4.3 Configuration
4.4 Operation
4.5 Vizomo Appendices

# 4.1.1 Installing Vizomo Controller

Vizomo Controller can be installed on any PC running Windows XP, Vista, or Windows 7 and is available from the Barco Creative LED support page: http://cled.barcousa.com

---

NOTE:

If a previous version of Vizomo Controller exists use add/remove programs in the Windows Control Panel to remove it. If you do not do this the Vizomo Controller Installer will not be able to complete the installation.

---

To install the Vizomo Controller:

- Double click the VizomoControllerSetup.exe
- Follow the prompts.
- Microsoft's .Net Framework may need to be installed. If so, the machine will need to be connected to the internet to download the files. The installer will guide you through the process.

Once the installer has finished, Vizomo Controller can be found in the Start menu under "Programs\ Vizomo". By default the application is installed to:

*c:\Program Files\Barco\VizomoController*

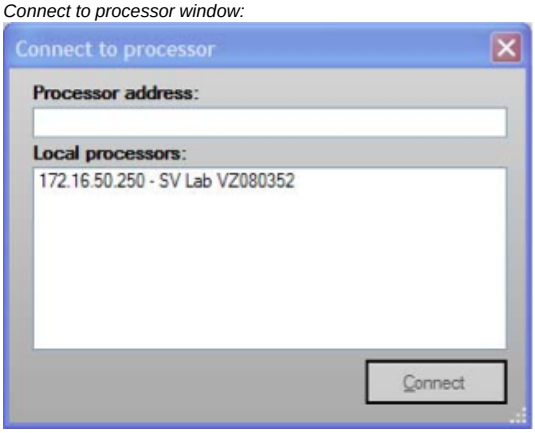
## See also

4.1.2 Connecting to a Processor
4.1.3 Upgrading Vizomo
4.1.4 Mapping

# 4.1.2 Connecting to a Processor

When Vizomo Controller launches, the “Connect to processor” window opens listing processors found on your LAN. You can either select one of the processors listed or enter the IP address of another processor.

*Connect to processor window:*




After you select a processor, you need to log in with a user name and password. By default, the Vizomo Controller has only an admin user with the following info:

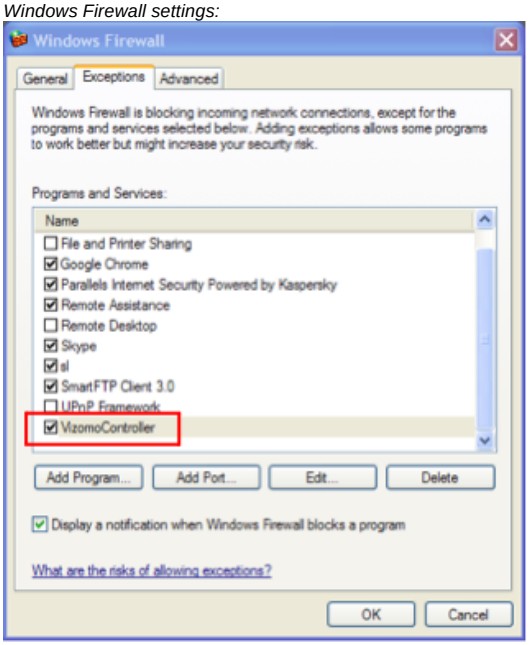
- User Name = admin
- Password = vision

---

NOTE:

If you know that you have an active Vizomo on your LAN but you can not see it listed in the processor window, check that Windows Firewall has an exception to allow Vizomo Controller access to search for processors.

*Windows Firewall settings:*




---

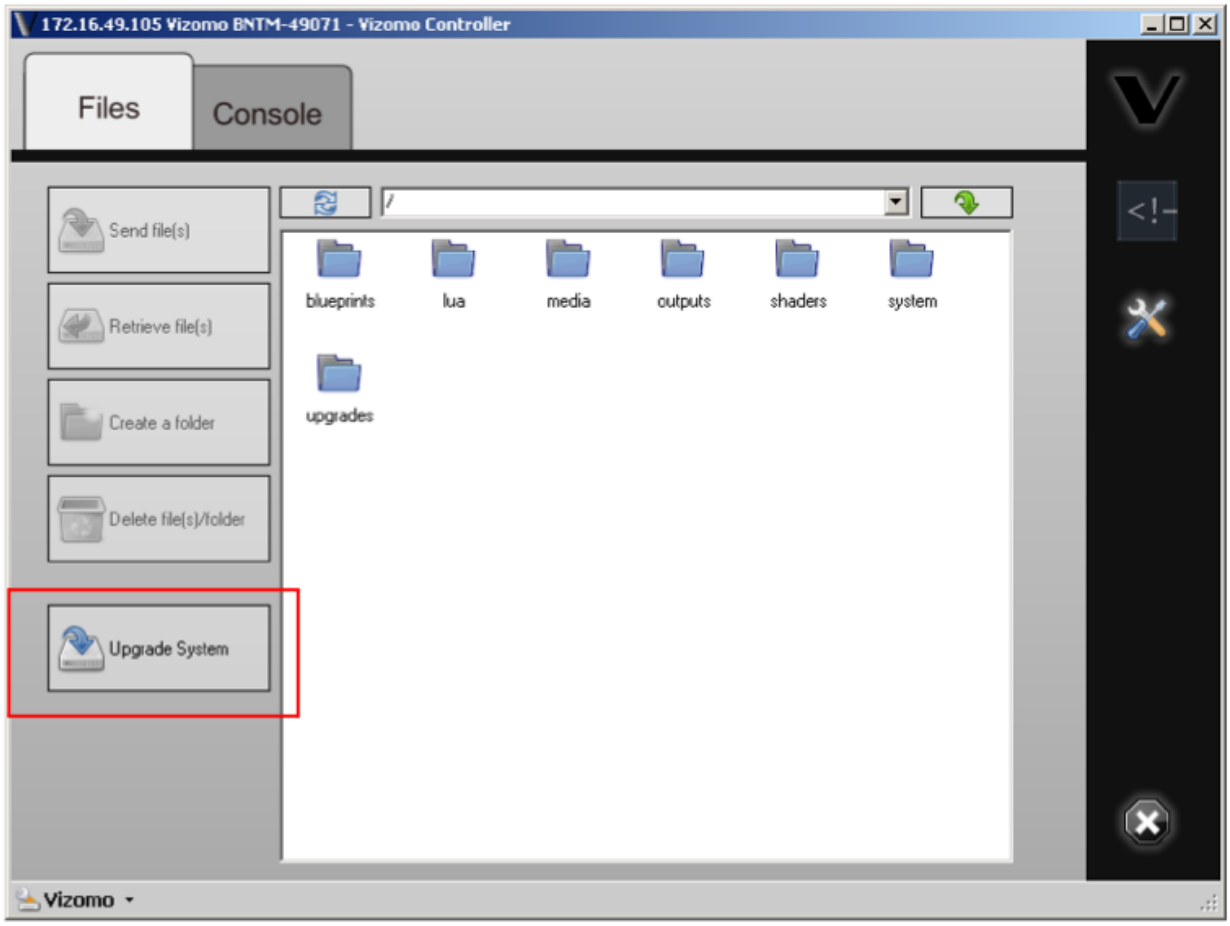
## See also

4.1.1 Installing Vizomo Controller
4.1.3 Upgrading Vizomo
4.1.4 Mapping

# 4.1.3 Upgrading Vizomo

On the System Settings page in the 'Files' tab, press the 'Upgrade System' button. A file browser appears. Navigate to the .vuz that is to be transferred to the Vizomo and select open. The upgrade .vuz file is transferred and the upgrade automatically executes. If necessary the destination processor automatically restarts.

*Upgrade Button:*




## See also

4.1.1 Installing Vizomo Controller
4.1.2 Connecting to a Processor
4.1.4 Mapping

# 4.1.4 Mapping

Building and uploading maps for Vizomo is done with RasterMAPPER Version 4 software available from Barco. For the quick start guide to RasterMAPPER, see the 6.4 RasterMAPPER QuickStart section.

## See also

4.1.1 Installing Vizomo Controller
4.1.2 Connecting to a Processor
4.1.3 Upgrading Vizomo

# 4.2 General Overview

The Vizomo video processor is an advanced LED screen controller. Unsurpassed flexibility and configurability, together with the most advanced video processing technology available, conquers virtually any creative or technical challenge. Use the built-in set of tools to create intricate visual arrangements with real-time video streams. Massive computational power ensures smooth content delivery to your LED screen.

Control Vizomo remotely with Raster MAPPER 4.2.0 software. RasterMAPPER 4.2.0 presents users a clear cut interface with which to harness Vizomo's underlying complexity.

Robust hardware matches the processor's performance.

4.2.1 Key Features
4.2.2 Safety Information
4.2.3 Hardware Overview
4.2.4 Power Up

## See also

4.1 Vizomo Quick Start
4.3 Configuration
4.4 Operation
4.5 Vizomo Appendices

# 4.2.1 Key Features

**Raster MAPPER 4.2.0**

A simple TCP/IP connection between a computer running Raster MAPPER 4.2.0 and a Vizomo processor gives full remote control of multiple processors. A streamlined workflow provides one interface for mapping, PXL addressing, and screen control.

**Scaling**

Size multiple simultaneous windows with pixel-for-pixel accuracy.

**Color processing**

The Vizomo processor automatically calibrates C-series screens with selectable white point targets. Superior color reproduction is achieved with an extended color gamut and 128-bit per pixel accuracy.

**Powerful**

State of the art hardware for very low latency processing of multiple input formats to multiple output ports (on specific models).

**Multi-Tap Windowing**

Multiple simultaneous cropping. An entire source, or a portion of a source, can be simultaneously directed to several windows via the Multi-Tap function.

## See also

4.2.2 Safety Information
4.2.3 Hardware Overview
4.2.4 Power Up

# 4.2.2 Safety Information

WARNING

- Keep connections free of stress to ensure proper operation.
- Do not open the Vizomo chassis, as there is risk of electric shock.
- Do not move the chassis while in operation. Internal components are susceptible to damage caused by vibration during operation.
- Do not block front or rear vents/fans to prevent overheating and/or damage.
- Do not place liquids on or around the unit.
- Do not insert objects through vent slots.
- Do not place magnetic devices near unit.
- Always connect chassis to a grounded power source.
- If using an extension cord, make sure all connections and cords are properly rated to the load.
- Refer all servicing to qualified personnel or Barco, Inc. directly.

## See also

4.2.1 Key Features
4.2.3 Hardware Overview
4.2.4 Power Up

# 4.2.3 Hardware Overview

## L1i

### Rear Connections:

Power Input: IEC 100-240 50/60Hz 350W

6x USB 1.1/2.0
1 x PS2
1 x PXL output dual 10/100/1000Mbps ethernet port
1 x User dual 10/100/1000Mbps ethernet port
1 x DVI monitoring output
1 x DVI over HDMI connector input

## R1i

### Rear Connections:

Power Input: IEC 100-240 50/60Hz 750W

6x USB 1.1/2.0
1 x PS2
4 x PXL outputs on dual 10/100/1000Mbps ethernet ports
1 x User Port on a dual 10/100/1000Mbps ethernet port
1 x Factory Port on a dual 10/100/1000Mbps ethernet port
1 x DVI monitoring output
1 x DVI over HDMI connector input
1 x HD-SDI input
1 x Genlock input

---

**NOTE:**

**The Vizomo R1i unit has two video inputs to allow for HDMI and SDI capture. Only one active input should be connected at any given time.**

---

## See also

4.2.1 Key Features
4.2.2 Safety Information
4.2.4 Power Up

# 4.2.4 Power Up

Follow the steps below to power up the processor:

1. Attach the included power cord to the unit via the Powercon connector.
2. Plug the other end of the cord into a grounded power source.
3. Attach any other cables that are relevant to your setup.
4. Press the center of the Vizomo's power switch (round push button on the front of the unit) to power the unit on.
5. Once Vizomo has finished booting, it can be administered by Vizomo Controller and RasterMAPPER.

## See also

4.2.1 Key Features
4.2.2 Safety Information
4.2.3 Hardware Overview

# 4.3 Configuration

**Overview**

Vizomo processors are configured over a network via two different applications, RasterMAPPER and Vizomo Controller. RasterMAPPER is responsible for creating maps and setting operating parameters such as display modes. Vizomo Controller is used for file management and operation.

4.3.1 Vizomo Controller
4.3.2 System Settings

## See also

4.1 Vizomo Quick Start
4.2 General Overview
4.4 Operation
4.5 Vizomo Appendices

# 4.3.1 Vizomo Controller

The following sections will cover:

4.3.1.1 Installation
4.3.1.2 Operation
4.3.1.3 Navigation Bar

## See also

4.3.2 System Settings

# 4.3.1.1 Installation

Vizomo Controller can be installed on any PC running Windows XP, Vista, or Windows 7 and is available from the Barco Creative LED support page: http://cled.barcousa.com

---

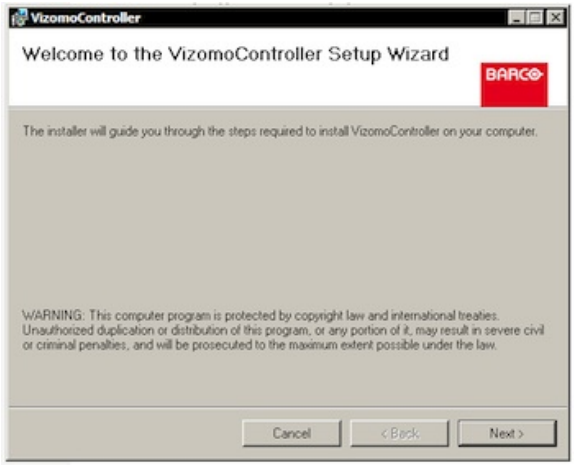
NOTE:

If a previous version of Vizomo Controller exists use add/remove programs in the Windows Control Panel to remove it. If you do not do this the Vizomo Controller Installer will not be able to complete the installation.

---

The installer ensures all software components that are required are installed.

*Vizomo Controller's Installer:*


VizomoController
Welcome to the VizomoController Setup Wizard
BARCO
The installer will guide you through the steps required to install VizomoController on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

Once Vizomo Controller has been installed, it can be found in the Start menu under

*Programs\ Vizomo*

By default the application is installed to:

*c:\Program Files\Barco\Vizomo Controller*

---

NOTE:

In order to communicate via TCP/IP for laptop control the Vizomo and the laptop must be set to the same IP and subnet range (i.e. 10.0.X.Y).

---

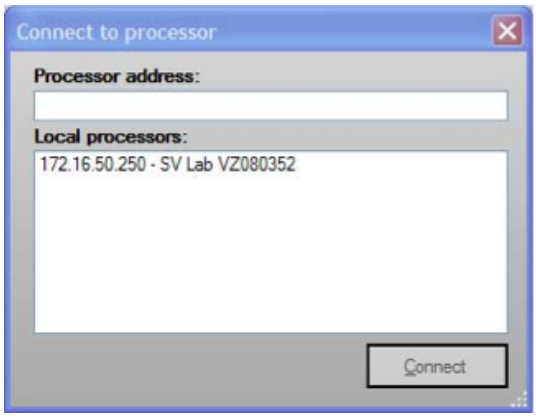
## See also

4.3.1.2 Operation
4.3.1.3 Navigation Bar

# 4.3.1.2 Operation

When Vizomo Controller launches, the “Connect to processor” window opens listing processors found on your LAN. You can either select one of the processors listed or enter the IP address of another processor.

*Connect to Processor Window:*

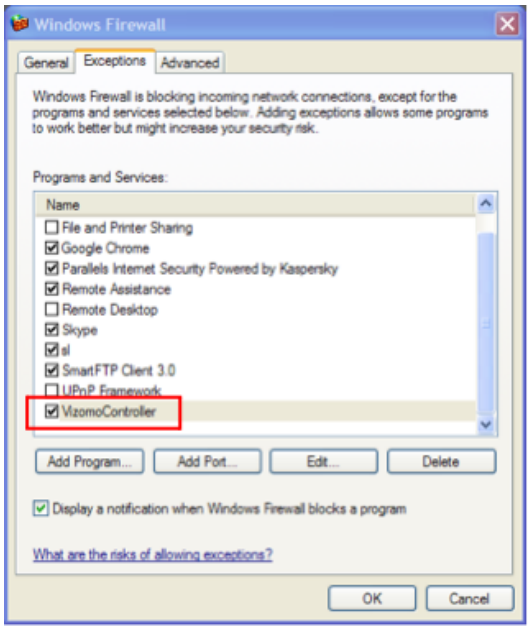



---

NOTE:

If you know that you have an active Vizomo on your LAN but you can not see it listed in the processor window, check that Windows Firewall has an exception to allow Vizomo Controller access to search for processors.

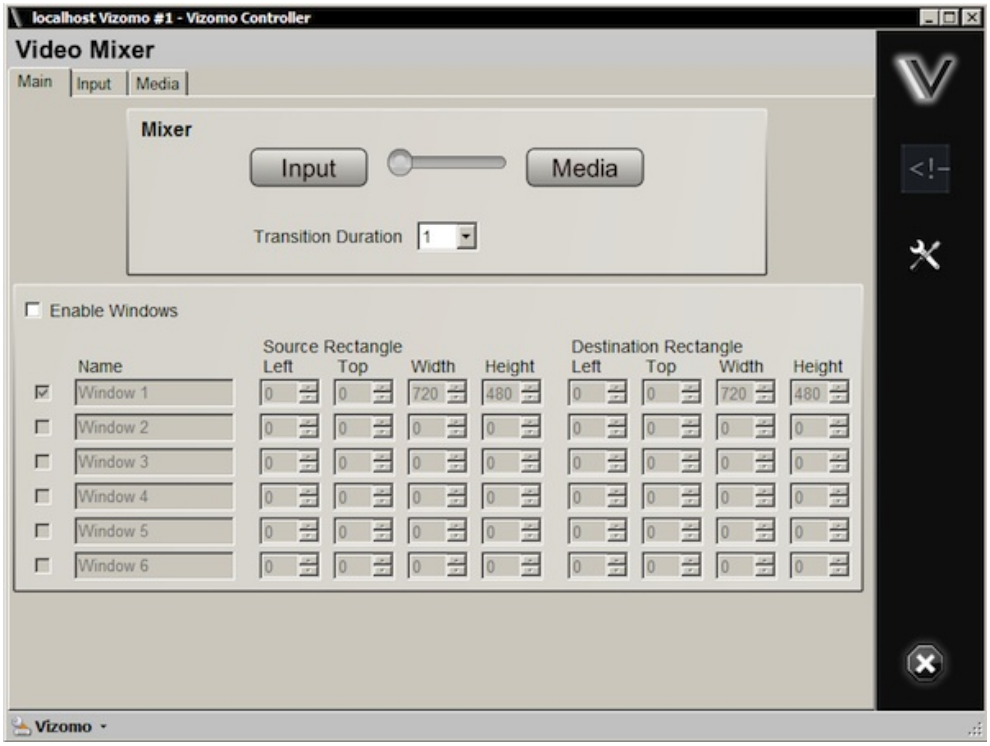
*Windows Firewall Setting*




---

After login, the Blueprint Operation screen is displayed along with the most recently activated blueprint's controls. Not all blueprints have graphical controls.

*Video Mixer Blueprint:*




## See also

4.3.1.1 Installation
4.3.1.3 Navigation Bar

# 4.3.1.3 Navigation Bar

**Navigation Bar**

1. Blueprint Operation - Specific controls for the current blueprint.
2. Blueprint Chooser – Selection and activation of blueprints.
3. System Settings – File management (copy, update processor)
4. Stop - Toggles the output to video black.

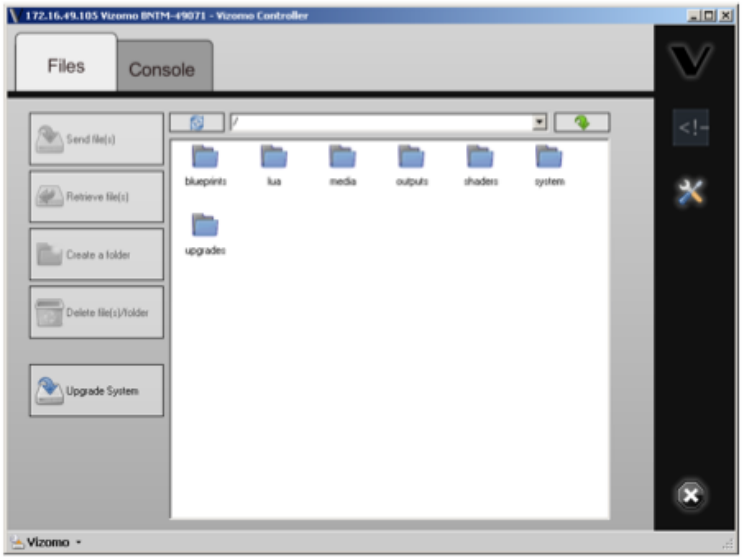
## See also

4.3.1.1 Installation
4.3.1.2 Operation

# 4.3.2 System Settings

**File Management**The file management interface consists of action buttons on the left and a file browser on the right. At the topmost level of the file browser the folders have the names of all of the different categories of files available (e.g. media, blueprints).

*File Management Window:*




**Media**
Stock media is laid out in a one-level directory hierarchy, folders reflect categories. To copy or retrieve a file, drag and drop the file or use the function buttons on the left of the window.

**Blueprints**
Blueprints are shown as file icons. If there are no user blueprints, only factory blueprints are available. Factory blueprints are not manageable from this interface. To copy or retrieve a blueprint file, drag and drop the file or use the function buttons on the left of the window.

**Upgrades**
To upgrade the software, you need a ".vuz" file. Press the 'Upgrade System' button. A file browser appears. Navigate to the ".vuz" file that is to be used and click 'Open'. The upgrade file is transferred and the upgrade automatically executes. If necessary the destination machine automatically restarts.

**Motion Media**
The Vizomo processor can decode H264, MPEG, and MPEG-2 encoded video stored in the following container formats:

- Quicktime Movie (.mov)
- Windows Media (.avi)
- Matroska (.mkv)

**Still Media Formats**
The following still image formats are supported:

- PNG
- JPG
- TIFF 8b
- TIFF 16b

## See also

4.3.1 Vizomo Controller

# 4.4 Operation

The operation of a Vizomo processor begins with the selection of an appropriate blueprint. Each blueprint serves a different purpose. Once a blueprint is active, content may then be chosen and adjusted if necessary (i.e. color correction). Finally, other optional parameters, such as triggers, can be set according to your installation.

Video playback on a Vizomo processor is accomplished in many different ways, each tailored to the demands of various playback environments. A straight forward way to trigger playback and dissolve from one video file to another is done by using the Video Mixer blueprint.

4.4.1 Blueprint Chooser
4.4.2 DVI Capture
4.4.3 Video Mixer

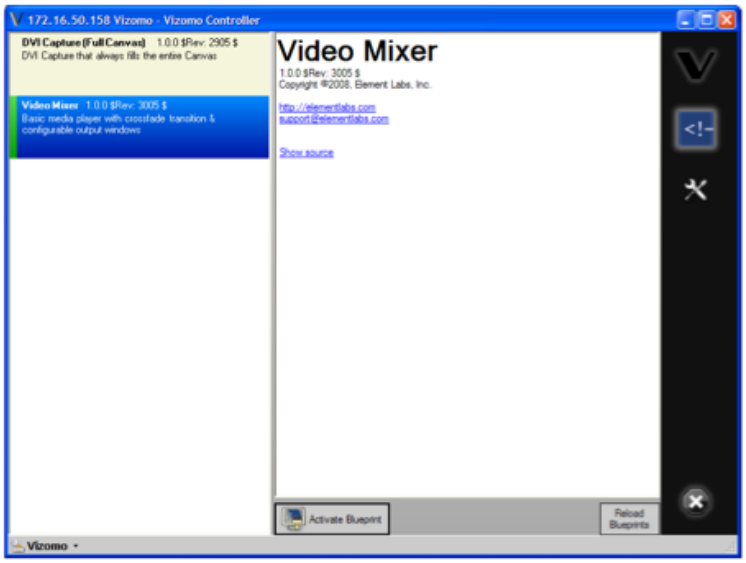
## See also

4.1 Vizomo Quick Start
4.2 General Overview
4.3 Configuration
4.5 Vizomo Appendices

# 4.4.1 Blueprint Chooser

Blueprints are control scripts for the media, text, geometry, animation and scheduler engines of the Vizomo processor. Blueprints use the Lua scripting language to define the functionality of a Vizomo processor by allowing various systesm components, visual interface objects, and control protocols to be assembled into an infinite number of configurations.

*Blueprint Chooser:*


172.16.50.158 Vizomo - Vizomo Controller
DVI Capture (Full Canvas) 1.0.0 $Rev: 2905 $
DVI Capture that always fills the entire Canvas
Video Mixer 1.0.0 $Rev: 3005 $
Basic media player with crossfade transition & configurable output windows
Video Mixer
1.0.0 $Rev: 3005 $
Copyright ©2008, Element Labs, Inc.
http://elementlabs.com
support@elementlabs.com
Show source
Activate Blueprint
Reload Blueprints
Vizomo

Only one blueprint can be active at a time. Switching between blueprints is done in the Blueprint Chooser window. The left side of the Blueprint Chooser window lists available system and user blueprints. Once a selection is made, click the ‘Activate Blueprint’ button on the bottom of the window.

Newly added blueprints are not displayed until the list has been manually rebuilt by pressing the ‘Reload Blueprints’ button. See File Management for information on adding new Blueprints.

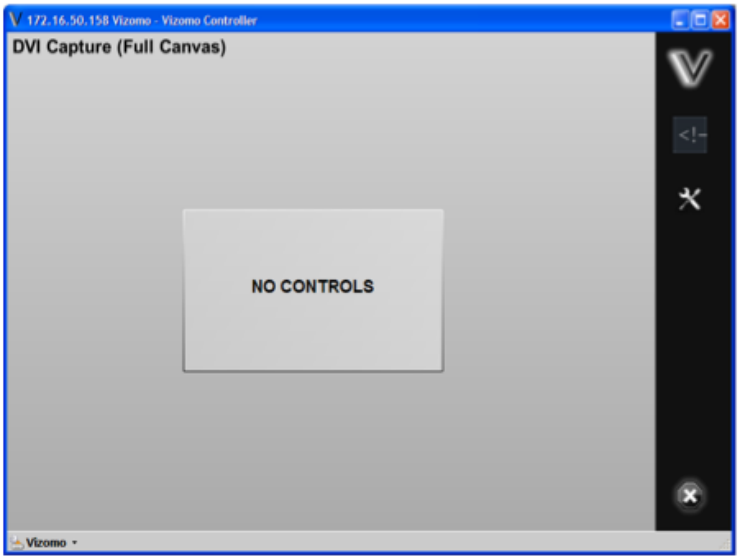
## See also

4.4.2 DVI Capture
4.4.3 Video Mixer

# 4.4.2 DVI Capture

The DVI Capture (Full Canvas) Blueprint scales Vizomo's DVI input signal to fit the entire canvas size. This Blueprint has no user controls.

*DVI Capture Blueprint*




## See also

4.4.1 Blueprint Chooser
4.4.3 Video Mixer

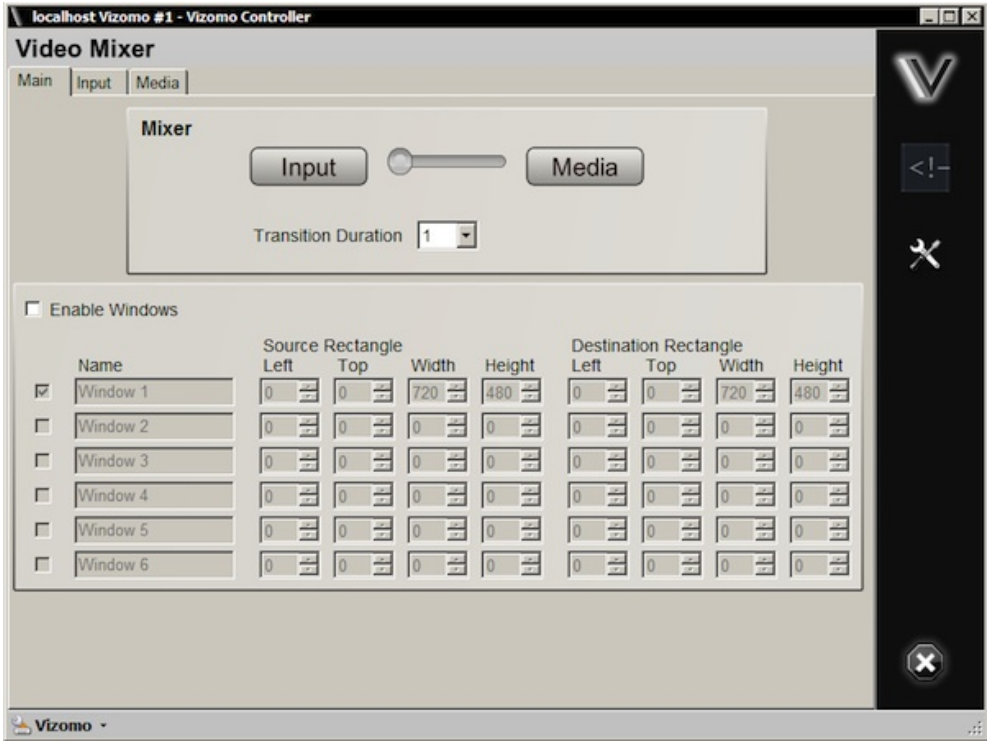
# 4.4.3 Video Mixer

The Video Mixer Blueprint combines a simple cross-fading mixer with powerful windowing tools. It is ideal for the needs of multi-display playback.

The Video Mixer Blueprint consists of three tabs; Main, Input, and Media.

## Main Tab

In the Main tab the user is able to choose between displaying a captured Input or on board media. The file that is playing can be windowed into 6 copies of the original file all with independent crop, scale, and x, y location.



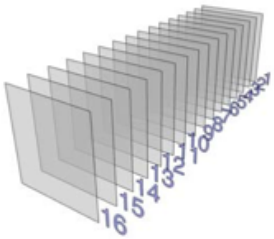

The Windowing tab contains control for 6 windows. Each can independently move and/or re-size content.

Define the original size and position of content with the *Source Rectangle* then, define the new size and position of content with the *Destination Rectangle*.

Keep in mind the following points about source and destination windows:

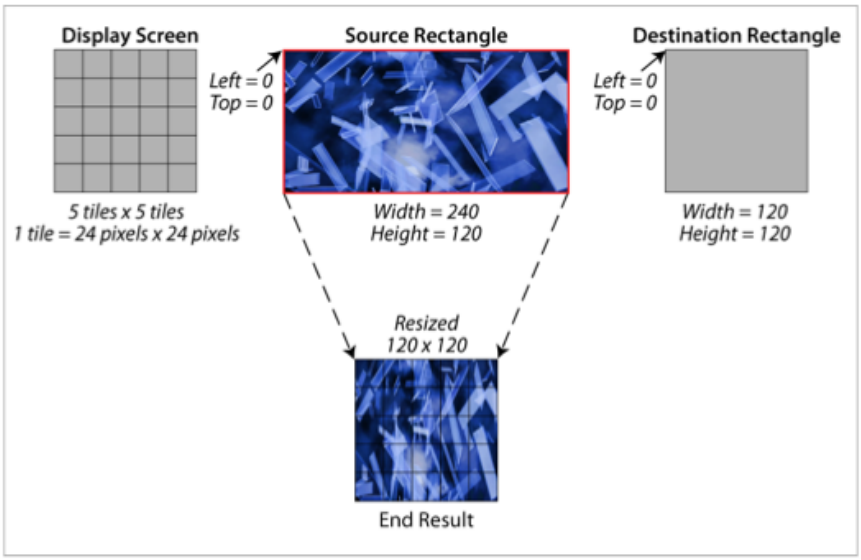
- The source for a window needs to be within the boundaries of the media or smeared media will be visible.
- Differences in source versus destination size results in automatic scaling.
- Windows can overlap sources and destinations. In the case of an overlap, the order of the window definition row (1-6) dictates the Z-axis position of the window. In other words, window #1 creates the lowest level window and all other windows are on top and might obscure the lower window(s).

*Window Stacking Order*

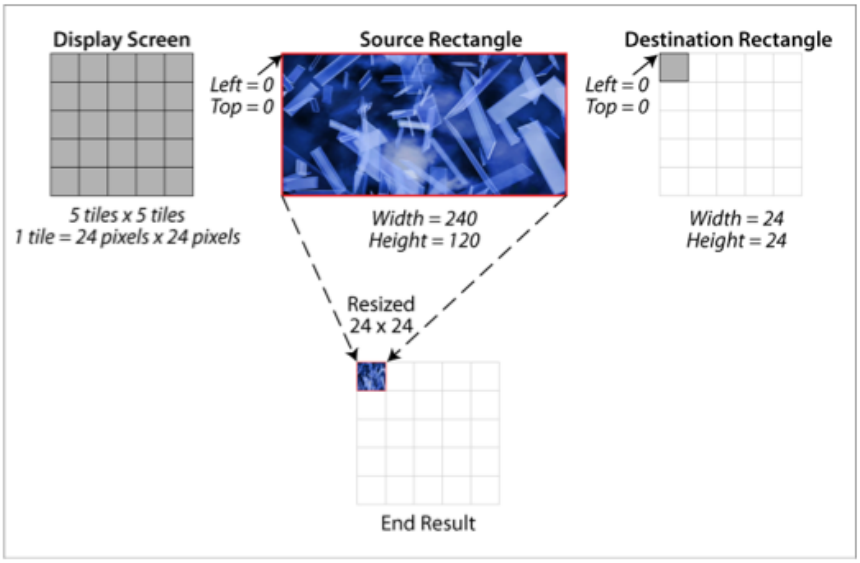


**Windowing Examples**

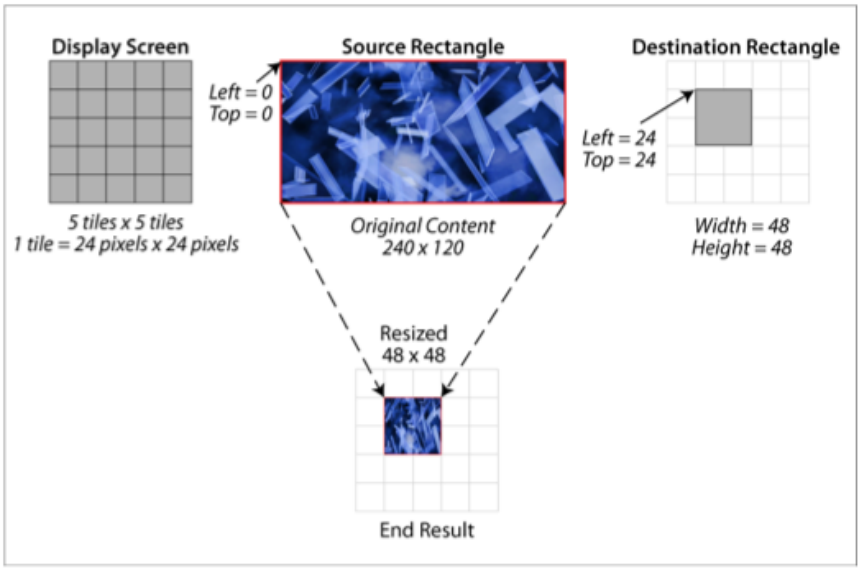
*Source / Destination Windowing Example #1:*




*Source / Destination Windowing Example #2:*

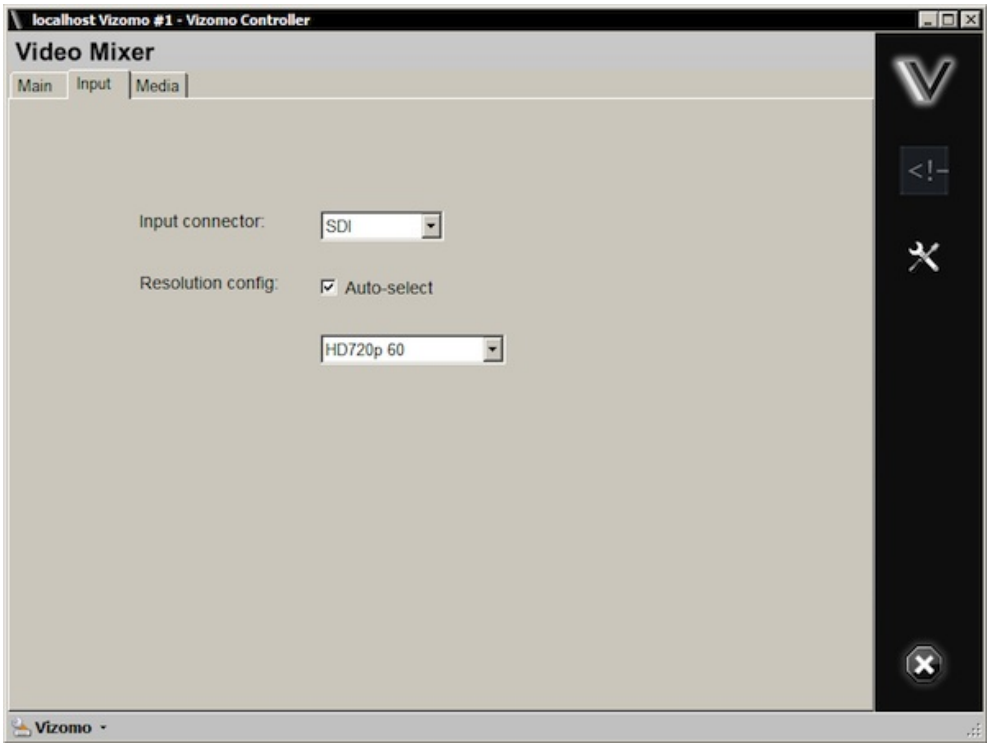



*Source / Destination Windowing Example #3:*




## Input Tab

Select between multiple input types on Vizomo R1 units. When using the HDMI input the input resolution must be manually selected.

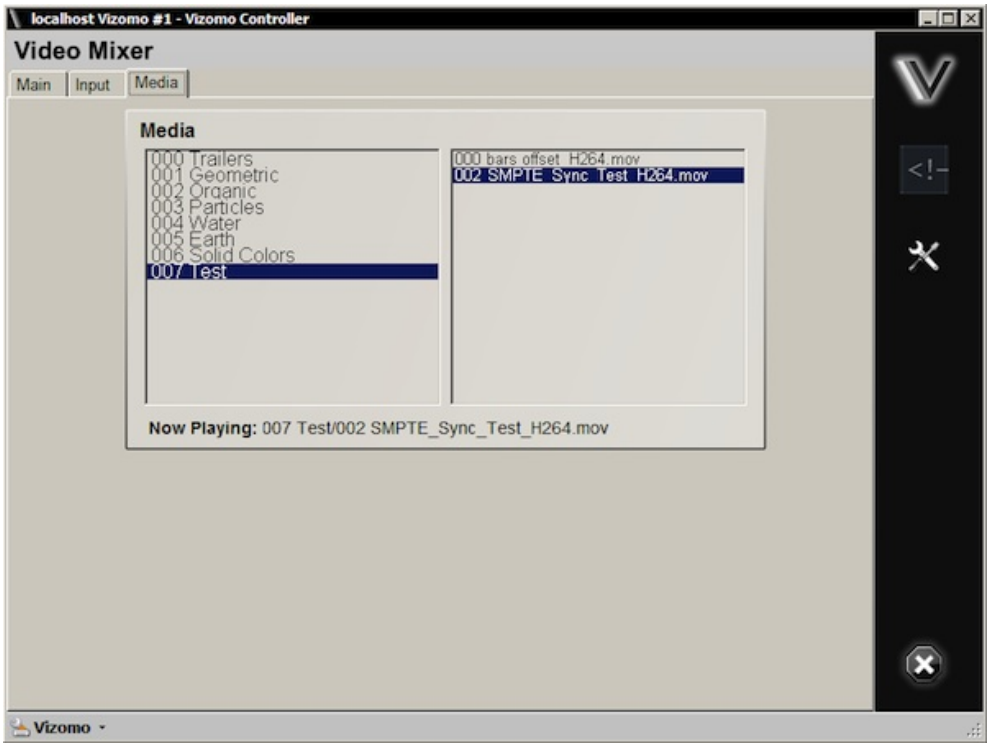



**NOTE:**

**The Vizomo R1i unit has two video inputs to allow for HDMI and SDI capture. Only one active input should be connected at any given time.**

## Media Tab

To play a movie, select a file from the folder/file selection window. Selections are automatically given a cross fade.




## See also

4.4.1 Blueprint Chooser
4.4.2 DVI Capture

# 4.5 Vizomo Appendices

Appendix A: Specifications
Appendix B: Video File Encoding

## See also

4.1 Vizomo Quick Start
4.2 General Overview
4.3 Configuration
4.4 Operation

# Appendix A: Specifications

## PXL outputs

- R1i Digitizer: 4 PXL outputs
- L1i Digitizer: 1 PXL output

## Dimensions

- R1i Digitizer: 4U 19" rack chassis (480 x 178 x 618 mm)
- L1i Digitizer: 2U 19" rack chassis (480 x 88.9 x 618 mm)

## Power

- 100-240 VAC, 50-60 Hz

## Power consumption

- R1i Digitizer: 750W
- L1i Digitizer: 350W

## Internal storage

- Solid state

## Connectivity

- USB 2.0, Gigabit Ethernet

## Genlock

- R1i Digitizer: Frame lock in/out
- L1i Digitizer: none

## DVI (HDMI connector) and SDI (R1i model only) Input

- 480/29.98 NTSC
- 480/29.97 NTSC
- 576/25 PAL
- 720p50
- 720p59.94
- 720p60
- 1080p23.98
- 1080p24
- 1080p25
- 1080p29.97
- 1080p30
- 1080i50
- 1080i59.94
- 1080i60

## DVI monitoring

- 1024 x 768 @ 60 Hz
- 1280 x 720 @ 50/60 Hz (720p)
- 1920 x 1080 @ 24/25/30/50/60 Hz (1080p)
- 1920 x 1200 @ 60 Hz

## See also

Appendix B: Video File Encoding

# Appendix B: Video File Encoding

Video files must be encoded and saved in a specific format and file naming structure for playback on a Vizomo processor. This section outlines the simple steps to convert your source material to a Vizomo-compatible format (H.264, MPEG-4 Part 10) and file name.

## Requirements:

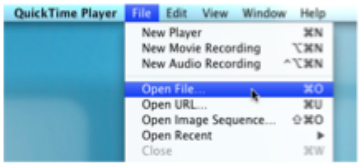
QuickTime Player with Pro License, v7.5.0 or later (Mac or PC) For more information go to: http://www.apple.com/quicktime/pro/.

## Procedure:

Follow the steps below to ensure your source video is saved and encoded properly to play back on a Vizomo processor.

1. Launch QuickTime Player and open your media file by selecting “Open File” from the File menu.

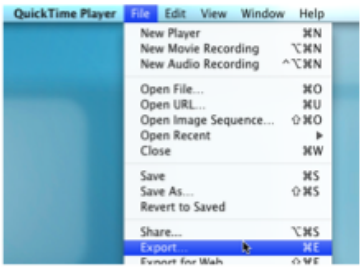
*File, Open Menu:*




2. Browse to the location of your source media and select “Open”. Verify that your source media plays correctly by playing it in the QuickTime window before proceeding.

3. Choose “Export” from the File menu.

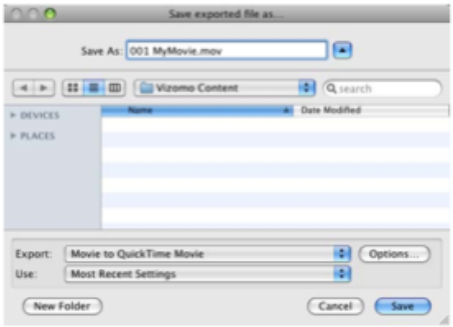
*File, Export Menu:*




4. Enter an appropriate name in the “Save As” field. Note, for default Vizomo blueprints, you must start the filename with a three digit num- ber. For example, a valid movie name would be “001 MyMovie.mov”.

5. Select “Movie to QuickTime Movie” from the “Export” selections.

*Save Exported File Menu:*

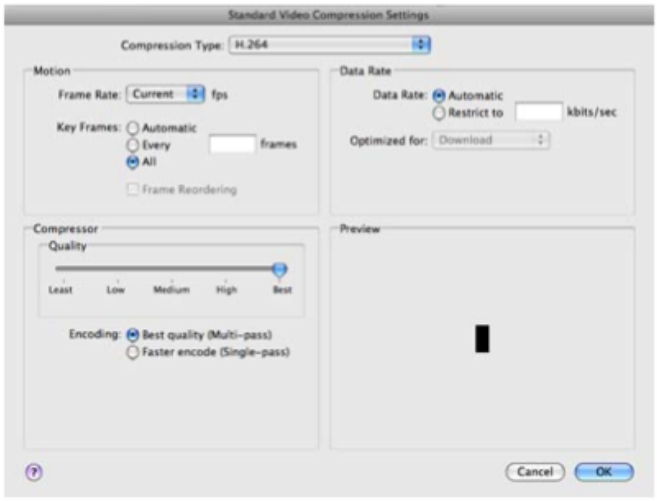



6. Press the “Options” button to open the Movie Settings window.

*Movie Settings Window:*

7. Press the “Settings” button to open the Standard Video Compression Settings window:

*Standard Video Compression Settings Window:*




8. Confirm the following settings.

| Category | Parameter | Setting | Notes |
|---|---|---|---|
| Compression Type | | H.264 | |
| Motion | Frame Rate | 30 fps | This is typically 30, however it can be as high as 60 for high fps footage. |
| | Key Frames | All | |
| Compressor | Quality | Best | |
| | Encoding | Best quality | |
| Data Rate | Data Rate | Automatic | |

9. Press the “OK” button to return to the Movie Settings window.

10. Press the “Size” button to open the Export Size Settings window and confirm the dimen- sions for your output size are correct.

*Export Size Settings Window:*

11. If your source footage is interlaced, be sure to check the “Deinterlace Source Video” checkbox.

12. Press the “OK” button to return to the Export window.

13. Press the “Save” button and your video will begin the encoding process. This process may take several minutes, depending on the length of

your video.

When the encoding process is finished, you will have a new file with the proper codec, bit rate, and file name for playback on Vizomo processor.

For information on transferring files to the Vizomo processor for playback, see File Management.

For information on playing back video files, see Newly added blueprints are not displayed until the list has been manually rebuilt by pressing the ‘Reload Blueprints’ button. See File Management for information on adding new Blueprints.

## See also

Appendix A: Specifications

# 5. PDB-5 Manual

5.1 Safety & Installation Guidelines
5.2 System Overview
5.3 Operation

## See also

Online Help System
2. C-series Tile Manual
3. Helix P1 Manual
4. Vizomo User Guide
6. RasterMAPPER User Guide
7. PXL System Online Help Notes
Site Index

# 5.1 Safety & Installation Guidelines

WARNING

Read the installation instructions before connecting the system to the power source.
Attention: Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.
Warnung: Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

DANGER

Risk of electrical shock. No user-serviceable parts inside.
Observe all applicable electrical codes.
The power outlet shall be installed near the equipment and shall be easily accessible.

WARNING

Do not hot plug any cables. Damage to the connector pins may occur. Resulting damage is not covered under warranty.
Unit shall not be exposed to dripping or splashing. To reduce the risk of electric shock, do not expose this apparatus to rain or moisture.

## See also

5.2 System Overview
5.3 Operation

# 5.2 System Overview

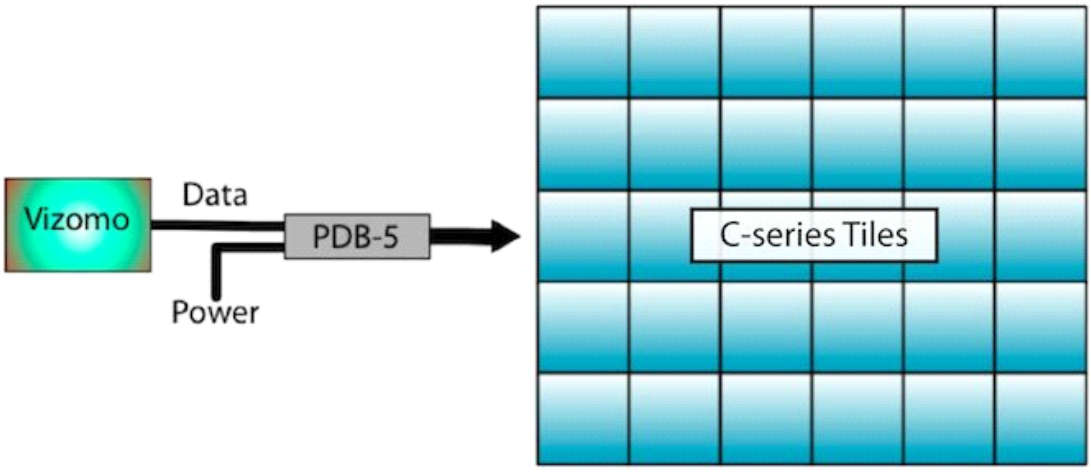
5.2.1 Basic System Info
5.2.2 PDB-5 Overview
5.2.3 Status Indicators

## See also

5.1 Safety & Installation Guidelines
5.3 Operation

# 5.2.1 Basic System Info

The diagram below provides an overview of a typical system using the PDB-5 along with C-series tiles and a Vizomo processor.




The Vizomo processor provides video data to the PDB-5 which combines that data with AC power and sends it to the C-series tiles on one cable.

Detailed information on power and data distribution is provided in the C-series tile manual, section 2.3 Power & Data Distribution.

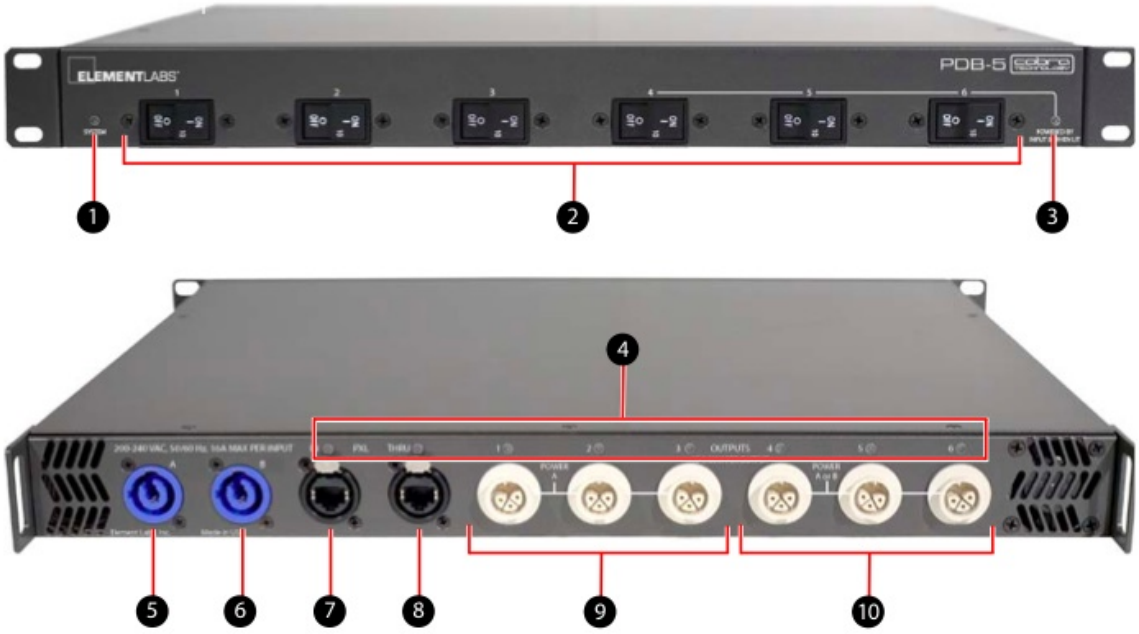
For information on the Vizomo processor, consult the Vizomo User Guide.
For information on the C-series fixtures, consult the C-series Tile Manual.

## See also

5.2.2 PDB-5 Overview
5.2.3 Status Indicators

# 5.2.2 PDB-5 Overview

The PDB-5 handles the power and data distribution for fixtures using the PXL data format, such as C-series Tiles, Helix PXL Nodes, etc.




1. System Status Indicator. Indicates power and boot status.
2. Circuit Breakers. 2-pole, 10A magnetic hydraulic circuit breakers for each of the 6 PXL cable outputs.
3. Power Input B Indicator. Indicates presence of power input through connector B on the back panel. Input B powers outputs 4-6.
4. Port Status Indicators. Indicates link integrity, disabled, activity, speed, full-duplex.
5. AC Power Input A 200-240 VAC, 50/60 Hz, 16 A max. via PowerCon (blue) connector.
6. AC Power Input B 200-240 VAC, 50/60 Hz, 16 A max. via PowerCon (blue) connector.
7. PXL Data Input via RJ45 EtherCon (shown) or optional Fiber Optic (not shown) connector.
8. PXL Data Thru (pass through) via RJ45 EtherCon connector.
9. PXL Cable Outputs 1-3. Integrated power and data outputs 1-3 via custom PXL Cable connectors. Powered by AC Power Input A.
10. PXL Cable Outputs 4-6. Integrated power and data outputs via custom PXL Cable connectors. Powered by AC Power Input A, or B if present.

## See also

5.2.1 Basic System Info
5.2.3 Status Indicators

# 5.2.3 Status Indicators

## System Status Indicator

The LED on the front of the PDB-5 indicates system status as follows:

| Color | State | Description |
|---|---|---|
| Off | Steady | System is not powered on |
| Green | Blinking | System is booting up |
| Green | Steady | System is operating correctly |
| Amber | Steady | System is receiving power, but not operating correctly |

## Port Status Indicators

The LEDs on the rear of the PDB-5 indicates each port's status as follows:

| Color | State | Description |
|---|---|---|
| Off | Steady | No link |
| Green | Steady | Link present |
| Green | Blinking | Activity - port is sending or receiving data |
| Amber/Green | Alternating | Link fault |
| Amber | Steady | Port is blocked and not forwarding data |
| Amber | Blinking | Port is blocked and is not sending or receiving packets |

## See also

5.2.1 Basic System Info
5.2.2 PDB-5 Overview

# 5.3 Operation

5.3.1 General Operation
5.3.2 Power Input & Output
5.3.3 Data Input

## See also

5.1 Safety & Installation Guidelines
5.2 System Overview

# 5.3.1 General Operation

The steps below provide the basic information to begin operating the PDB-5. Refer to PDB-5 Overview (p. 4) for connection information.

1. Connect the PXL data cable to the PXL Data Input jack on the back of the PDB-5.
2. Connect the power and data cable(s) from the fixture(s) to the appropriate PXL Cable output(s) on the back of the PDB-5.
3. Connect the PowerCon end of the power cable to the AC Power Input A jack on the back of the PDB-5.
4. Connect the IEC end of the power cable above to a 200-240 VAC power source.

---

**NOTE**
When first powered on, the PDB-5 will take several minutes to be fully booted and configured.

---

## See also

5.3.2 Power Input & Output
5.3.3 Data Input

# 5.3.2 Power Input & Output

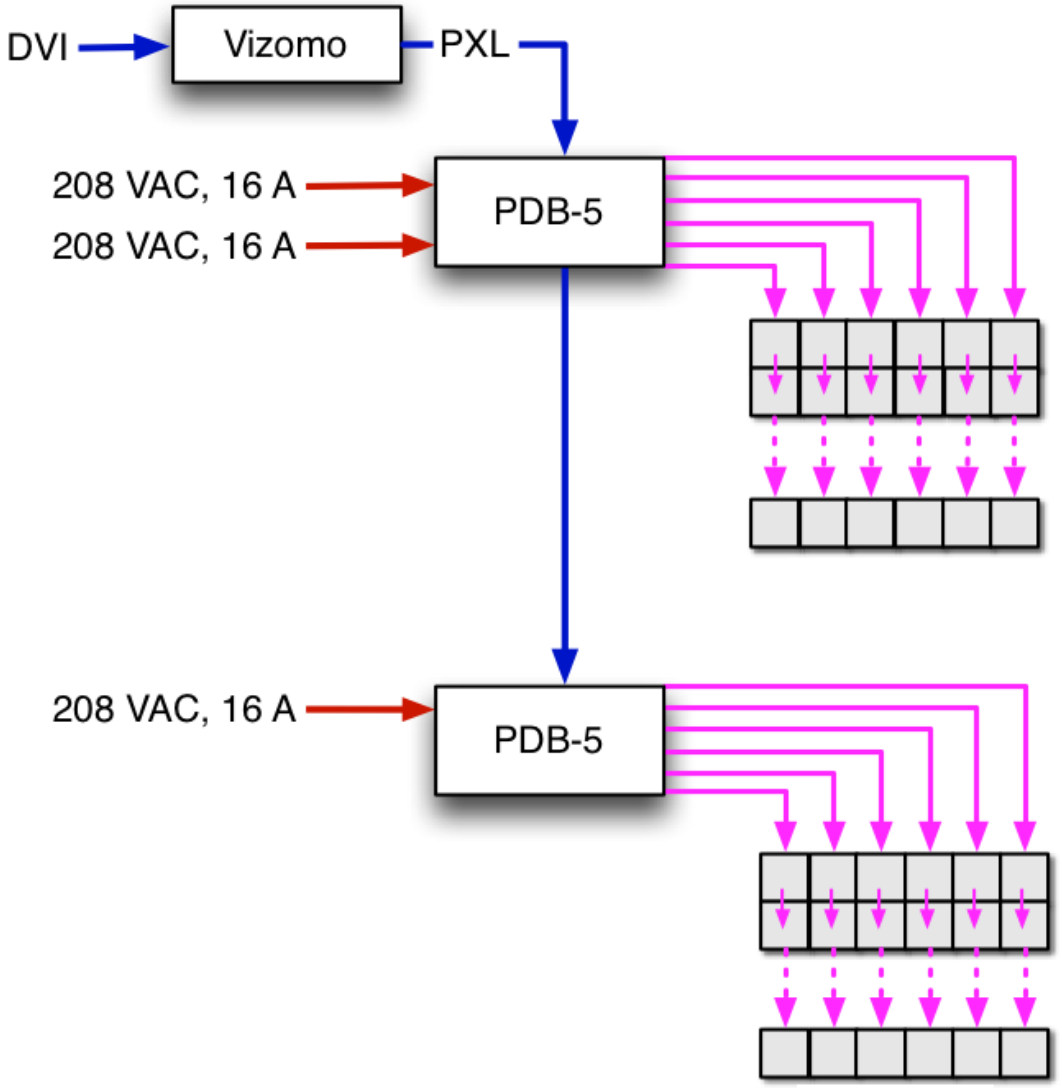
## Power Inputs A & B

The PDB-5 has two power 16A inputs on the rear panel labeled A and B.
Input A must always be used as it powers the electronics inside the PDB-5.
If only input A is used then all outputs (1 through 6) will be powered by input A.
When input B is used in addition to A, then outputs 4, 5, and 6 automatically switch over and become powered by input B. This doubles the PDB-5's total capacity.
A green indicator on the front panel shows when input B is being used.

## PXL Cable Outputs

The PDB-5 has 6x 10 amp outputs with breakers for AC power distribution.
The limit for each PDB-5 output is 10 A, with a total output of 32 A maximum per PDB-5, if both inputs A and B are used.
The maximum number of C8v tiles per PDB-5 port is 25 (this is limited by data, not power).
The maximum number of C11 tiles per PDB-5 port is 16 (this is limited by data, not power).

For additional information on the PXL Cable, see "Cables & Connectors" in the C-series Tile Manual.



WARNING - Do not hot plug any cables. Damage to the connector pins may occur. Resulting damage is not covered under warranty.

Observe the following power guidelines when setting up your C-series display. The tables below indicate maximum power consumption.

C11
Max Power = 85 watts (@5,000 nits, full white)

| Voltage | Amperage per Tile | Amperage per 16 Tiles | Max Panels per PDB-5[2] w/ 1 x 16A input | Max Panels per PDB-5[2] w/ 2 x 16A input |
|---|---|---|---|---|
| 240VAC | 0.35 | 5.7 | 45 | 90 |
| 220VAC | 0.39 | 6.2 | 41 | 83 |
| 208VAC | 0.41 | 6.5 | 39 | 78 |
| 200VAC | 0.42 | 6.8 | 38 | 75 |

1. PDB-5 has 32A limit (2x 16A).
2. Maximum C11 panels per PDB-5 Port is 16.

C8v
Max Power = 55 watts (@8,000 nits, full white)

| Voltage | Amperage per Tile | Amperage per 25 Tiles | Max Panels per PDB-5[2] w/ 1 x 16A input | Max Panels per PDB-5[2] w/ 2 x 16A input |
|---|---|---|---|---|
| 240VAC | 0.23 | 5.7 | 70 | 140 |
| 220VAC | 0.25 | 6.3 | 64 | 128 |
| 208VAC | 0.26 | 6.6 | 61 | 122 |
| 200VAC | 0.28 | 6.9 | 58 | 116 |

1. PDB-5 has 32A limit (2x 16A).
2. Maximum C8v panels per PDB-5 Port is 25.

When running typical video content, the duty cycle (average power consumption) is about 30% of maximum.

## See also

5.3.1 General Operation
5.3.3 Data Input

# 5.3.3 Data Input

C-series and other PXL data-driven fixtures are designed to work exclusively with the Vizomo processor.

Connect the User Ethernet port on the back of the Vizomo to the PXL input on the back of the PDB-5 with a CAT 5e patch cable. The PXL Data Thru connector may be used to connect additional PDB-5s in series.

For detailed information on the Vizomo processor, consult the Vizomo User Guide.

## See also

5.3.1 General Operation
5.3.2 Power Input & Output

# 6. RasterMAPPER User Guide

6.1 RasterMAPPER QuickStart
6.2 Basic Workflow
6.3 UI Overview
6.4 Software Updates
6.5 Mapping
6.6 Processor Control
6.7 RasterMAPPER Notes

## See also

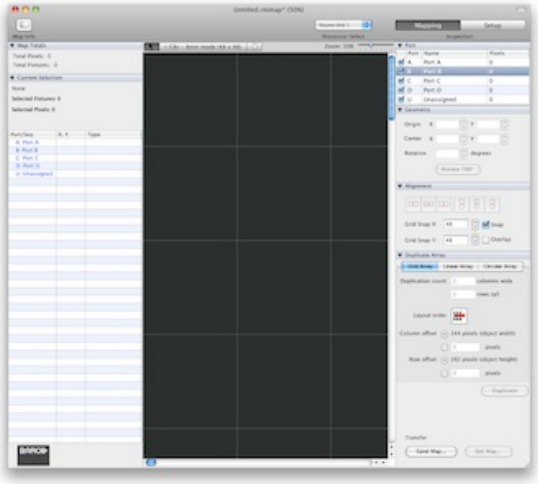
Online Help System
2. C-series Tile Manual
3. Helix P1 Manual
4. Vizomo User Guide
5. PDB-5 Manual
7. PXL System Online Help Notes
Site Index

# 6.1 RasterMAPPER QuickStart

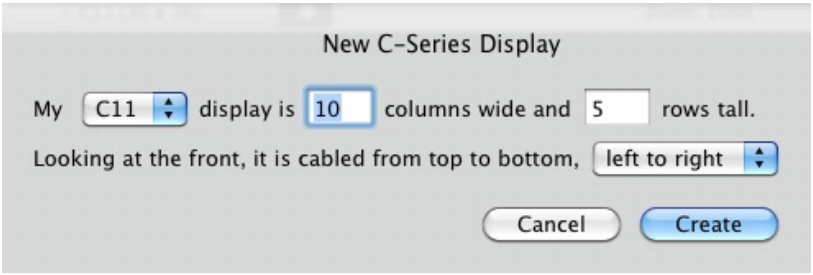
The following basic information will get you up and running quickly with RasterMAPPER version 4.0 and greater. The steps detailed below are only those necessary to create a map, send it to the processor, and ensure the fixtures are configured properly on the processor. These steps are based on the RasterMAPPER Basic Workflow using the Vizomo video processor and C11 fixtures.

**Create and Send Map**

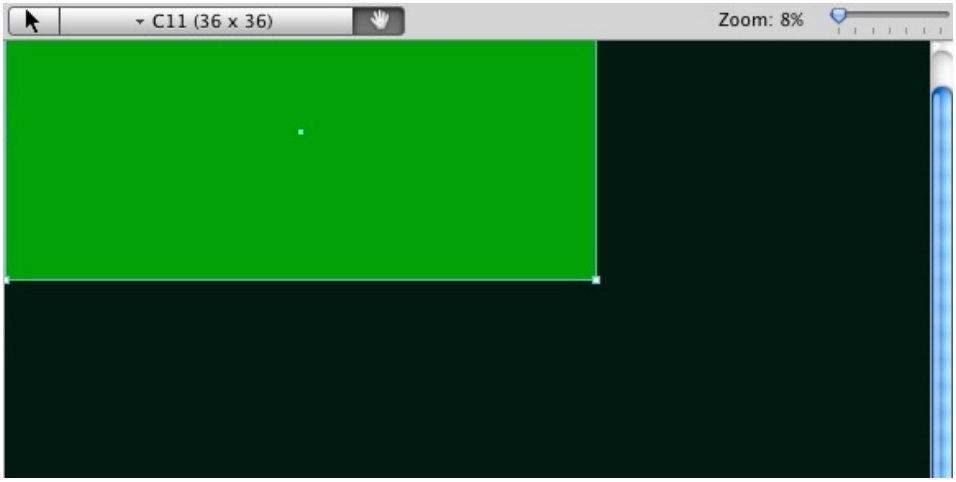
1. Download and Install RasterMAPPER.
2. Launch RasterMAPPER. A new window opens with a blank map and a 'New C-series Display' tool.



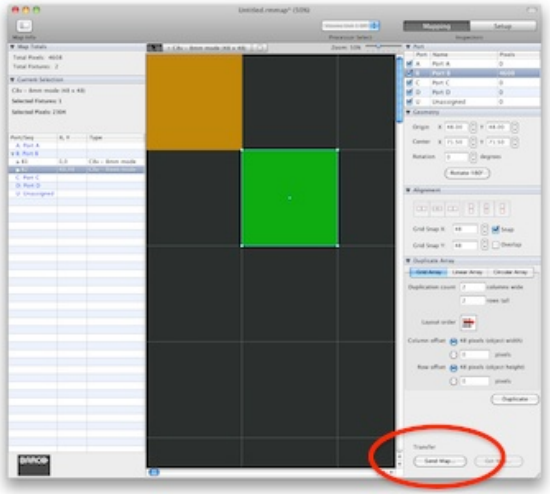
3. Define screen specifics then press ***Create***.


New C-Series Display
My C11 display is 10 columns wide and 5 rows tall.
Looking at the front, it is cabled from top to bottom, left to right
Cancel
Create

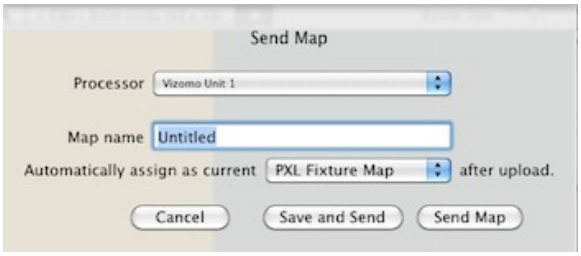
4. A grid will be generated in the top left position.




5. Click the **Send Map...** button.



8. Name the map and click **Send Map** to send the map to the Vizomo.




NOTE:

If you are using fixtures with the PXL protocol, such as C-series, and this is the first time you have uploaded a map to the Vizomo, you will also need to perform the steps of Enumeration and Calibration.

6.1.1 Enumeration
6.1.2 Calibration

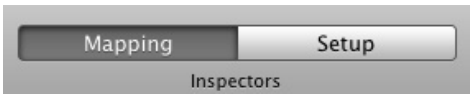
## See also

6.2 Basic Workflow
6.3 UI Overview
6.4 Software Updates
6.5 Mapping
6.6 Processor Control
6.7 RasterMAPPER Notes

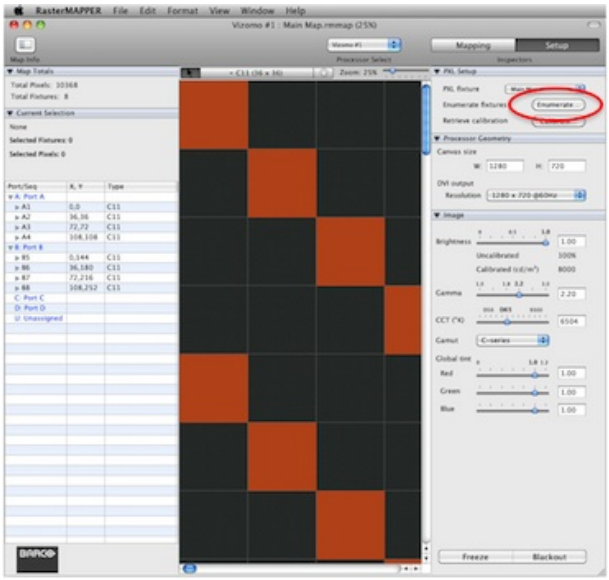
# 6.1.1 Enumeration

**Enumerate PXL Fixtures**

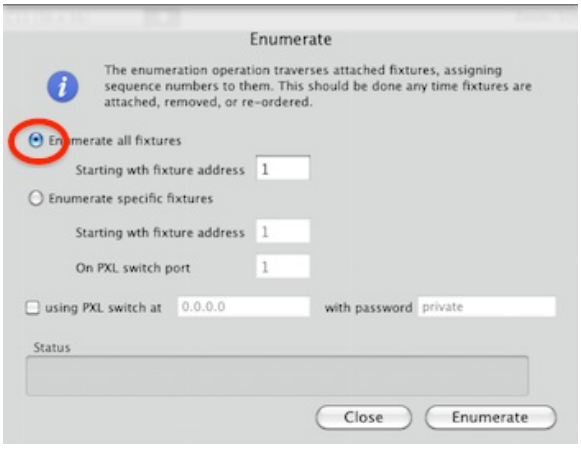
**1.** Click on the button for **Setup** inspectors.



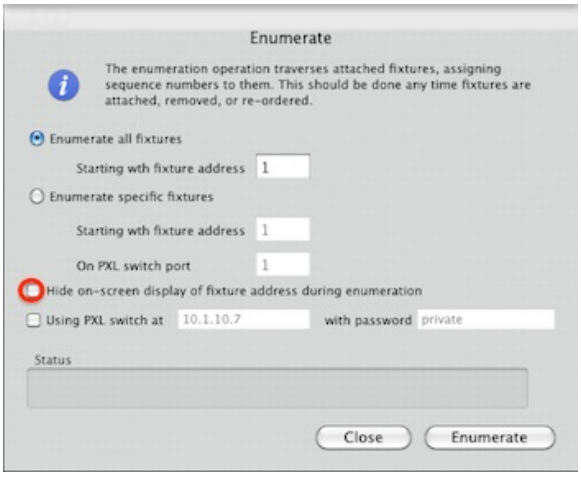

**2.** In the *PXL Setup* section, click **Enumerate**.



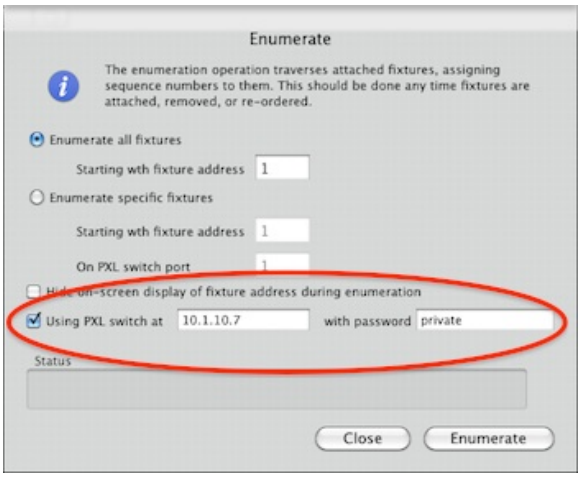
**3.** Click the radio button for ***Enumerate All Fixtures***.



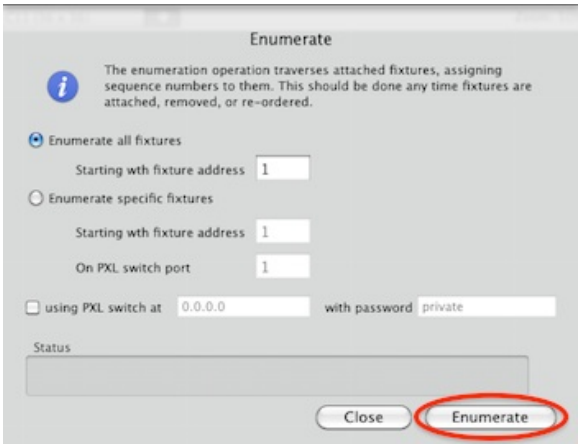

**4.** The Vizomo will ask tiles to show their enumerated address as the system is addressed. To enumerate without this 'on screen display' check the *Hide OSD* checkbox.


Enumerate
The enumeration operation traverses attached fixtures, assigning sequence numbers to them. This should be done any time fixtures are attached, removed, or re-ordered.
Enumerate all fixtures
Starting wth fixture address 1
Enumerate specific fixtures
Starting wth fixture address 1
On PXL switch port 1
Hide on-screen display of fixture address during enumeration
Using PXL switch at 10.1.10.7 with password private
Status
Close
Enumerate

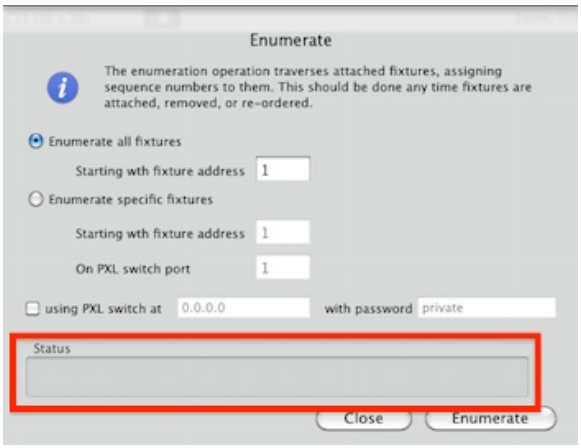
**5.** Most systems use a PDB5 or PXL switch to distribute the PXL data. If you have one of these devices select this checkbox and enter the IP address.


Enumerate
The enumeration operation traverses attached fixtures, assigning sequence numbers to them. This should be done any time fixtures are attached, removed, or re-ordered.
Enumerate all fixtures
Starting wth fixture address 1
Enumerate specific fixtures
Starting wth fixture address 1
On PXL switch port 1
Hide on-screen display of fixture address during enumeration
Using PXL switch at 10.1.10.7 with password private
Status
Close
Enumerate

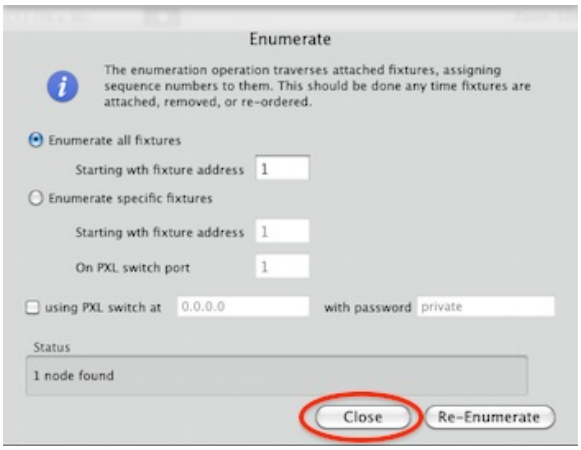
**4.** Click the **Enumerate** button.


Enumerate
The enumeration operation traverses attached fixtures, assigning sequence numbers to them. This should be done any time fixtures are attached, removed, or re-ordered.
Enumerate all fixtures
Starting wth fixture address 1
Enumerate specific fixtures
Starting wth fixture address 1
On PXL switch port 1
using PXL switch at 0.0.0.0 with password private
Status
Close
Enumerate

**5.** Check the status report to see activity during enumeration and the final outcome.




**6**. When the status area reads *xxx nodes found*, enumeration is complete click the **Close** button to close the window.




---

NOTE:

The Enumerate function can only be performed on Port A of a Vizomo. Systems that use multiple ports must be enumerated one line at a time.

---

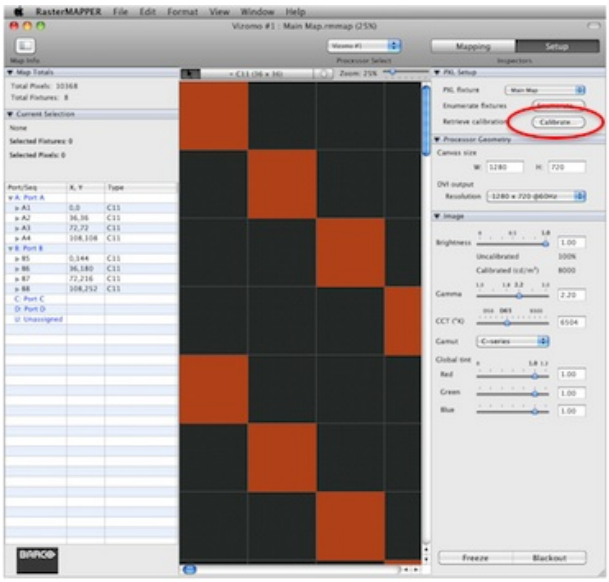
## See also

6.1.2 Calibration

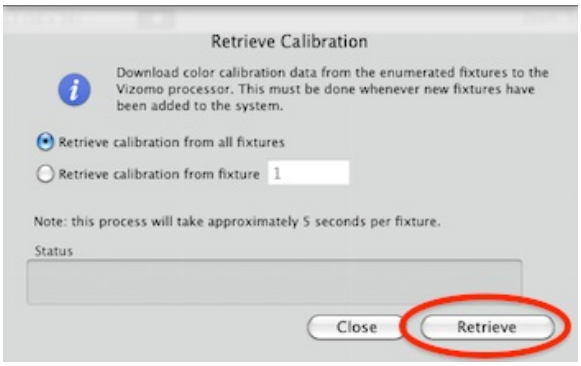
# 6.1.2 Calibration

**Retrieve Calibration Data from PXL Fixtures**

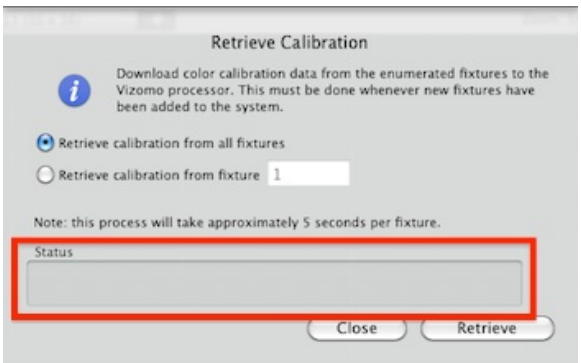
**1.** Click the **Calibrate...** button.



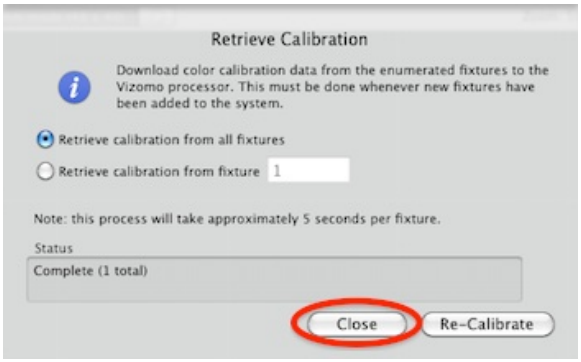
**2.** Click the **Retreive** button to begin the process.


Retrieve Calibration
Download color calibration data from the enumerated fixtures to the Vizomo processor. This must be done whenever new fixtures have been added to the system.
Retrieve calibration from all fixtures
Retrieve calibration from fixture
1
Note: this process will take approximately 5 seconds per fixture.
Status
Close
Retrieve

**3.** Check the status area for any errors.


Retrieve Calibration
Download color calibration data from the enumerated fixtures to the Vizomo processor. This must be done whenever new fixtures have been added to the system.
Retrieve calibration from all fixtures
Retrieve calibration from fixture
1
Note: this process will take approximately 5 seconds per fixture.
Status
Close
Retrieve

**4.** When the status area reads *Complete*, click the **Close** button to close the window.


Retrieve Calibration
Download color calibration data from the enumerated fixtures to the Vizomo processor. This must be done whenever new fixtures have been added to the system.
Retrieve calibration from all fixtures
Retrieve calibration from fixture 1
Note: this process will take approximately 5 seconds per fixture.
Status
Complete (1 total)
Close
Re-Calibrate

## See also

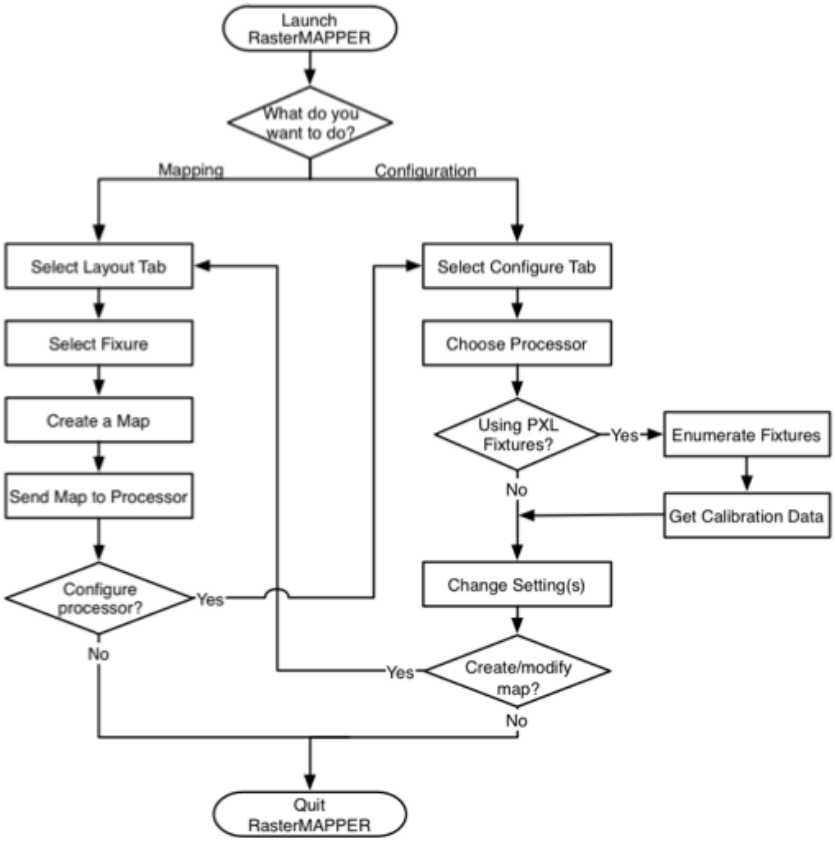
6.1.1 Enumeration

# 6.2 Basic Workflow

RasterMAPPER has two main functions:

- Create a map which defines the relationship between pixels on the video source (typically a computer screen) and the actual fixtures. After creating the map in RasterMAPPER it is uploaded and stored on the processor.
- Control and adjust the processor as needed.

The chart below illustrates the basic RasterMAPPER workflow.




NOTE:

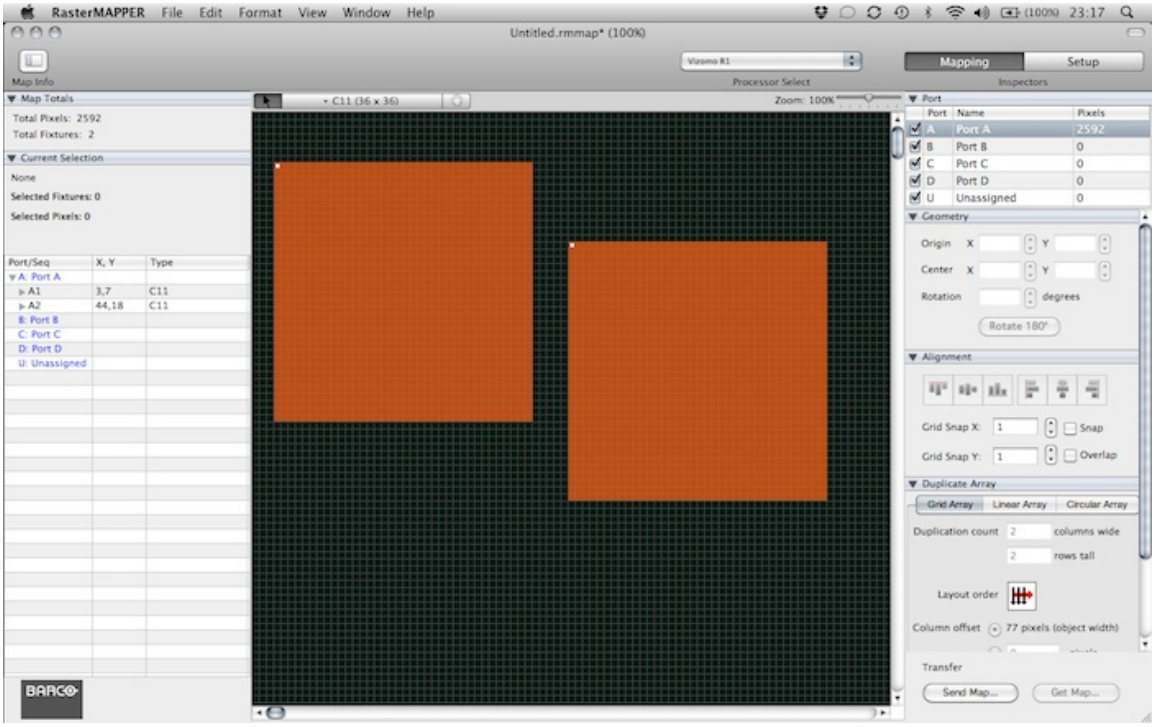
When using PXL protocol fixtures such as C-series, each time a map is changed enumerate and retrieve the calibration data.

## See also

6.1 RasterMAPPER QuickStart
6.3 UI Overview
6.4 Software Updates
6.5 Mapping
6.6 Processor Control
6.7 RasterMAPPER Notes

# 6.3 UI Overview

OS X version of the RasterMAPPER user interface:

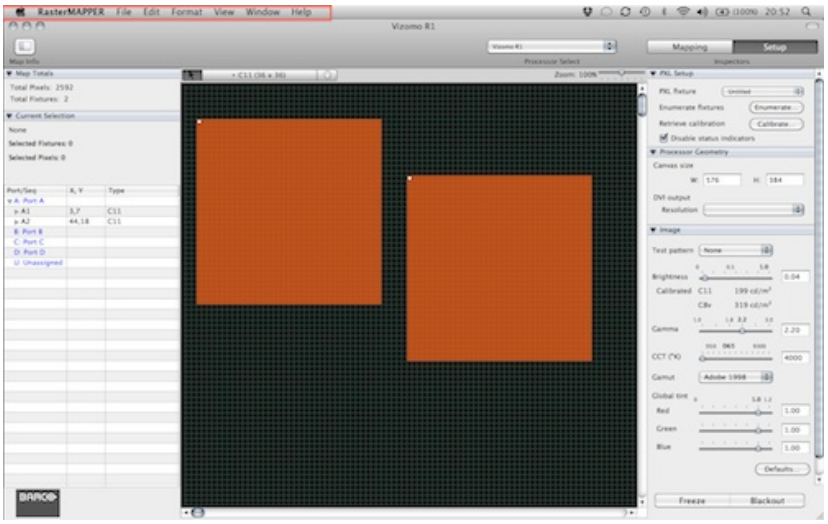



## Interface Sections

The following illustrations identify the major sections of the RasterMAPPER user interface.

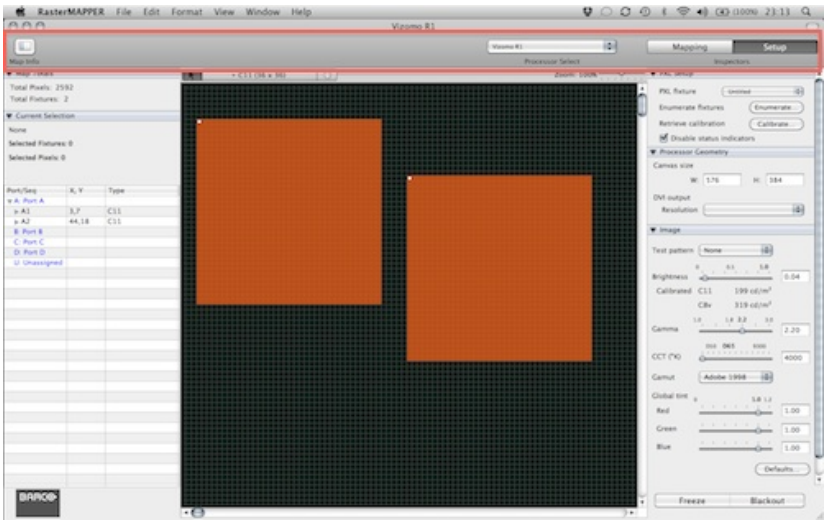
## Menu Bar

Menus of RasterMAPPER functions. More detail is provided in section 6.3.1 Menu Bar.



# Mode Selections

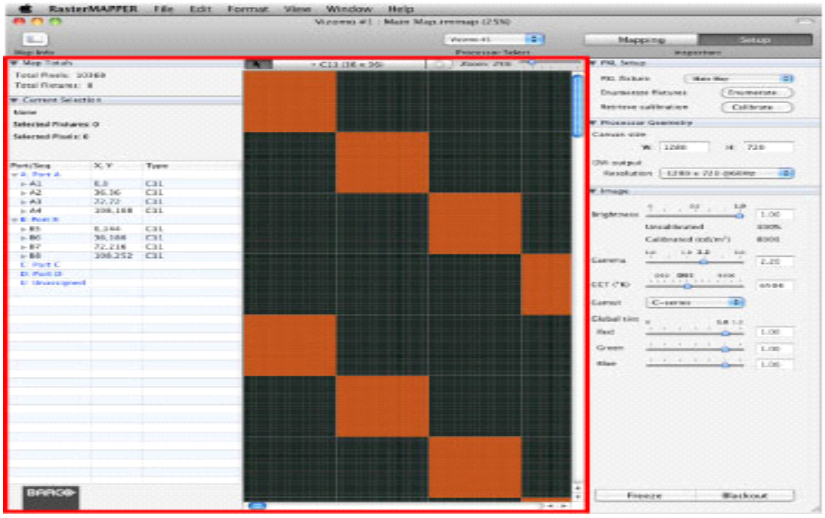
Select views, processors, and operational modes. More detail is provided in section 6.3.2 Mode Selection.



# Map Editing

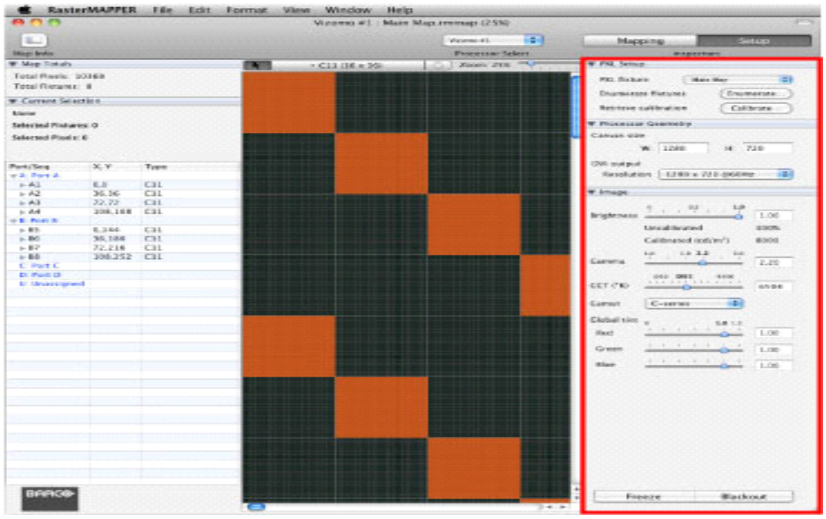
Everything for adding and editing of the fixtures on the map.

More detail is provided in section 6.3.3 Map Editing.



# Inspectors

The Mapping/Setup buttons toggle this inspector pane between information about either the map or the selected processor.
More detail is provided in section 6.3.4 Inspectors.



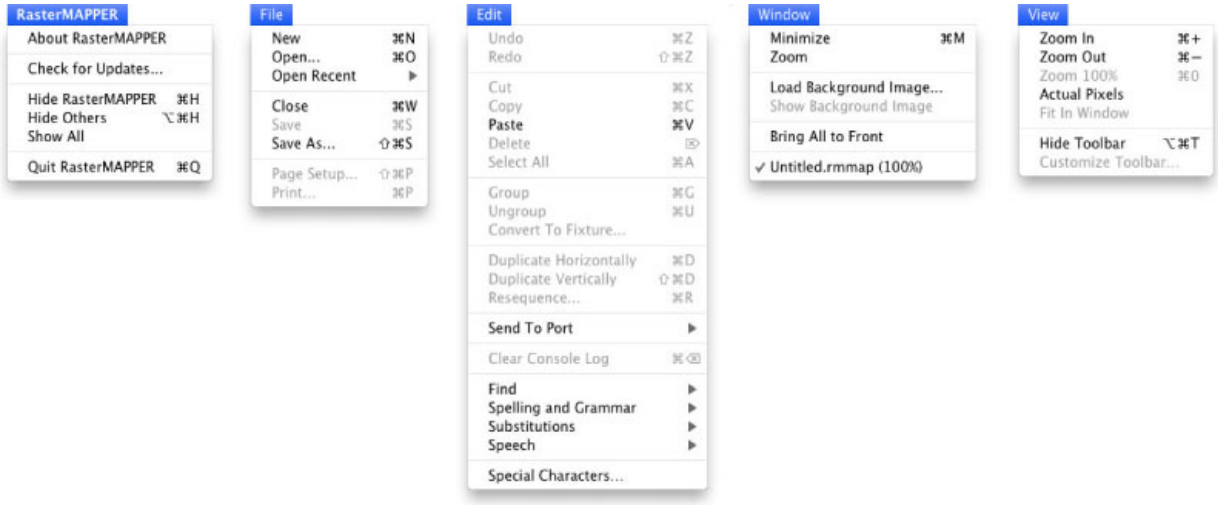
## See also

6.1 RasterMAPPER QuickStart
6.2 Basic Workflow
6.4 Software Updates
6.5 Mapping
6.6 Processor Control
6.7 RasterMAPPER Notes

# 6.3.1 Menu Bar

The menu bar is displayed at the top of the application and allows access to various features. If applicable, a keyboard shortcut is displayed.

Below are some of the menus:

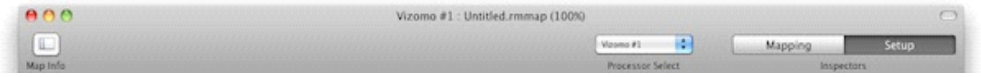



## See also

6.3.2 Mode Selection
6.3.3 Map Editing
6.3.4 Inspectors

# 6.3.2 Mode Selection

The Mode selection region contains tools for the overall setup of the application.




## Map Info Button

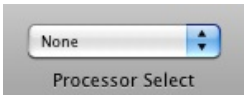
Toggles in/out the Map Info pane below the button.

## Map Title & Zoom Level

At the top center of the application window the name of the Vizomo and title of the map are displayed along with the current zoom level.

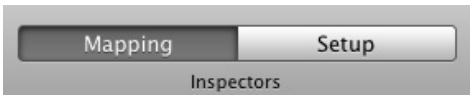
## Processor Select

Select a processor from a drop down menu.




## Inspector Toggle

The Mapping/Setup buttons toggle the inspector panels below.

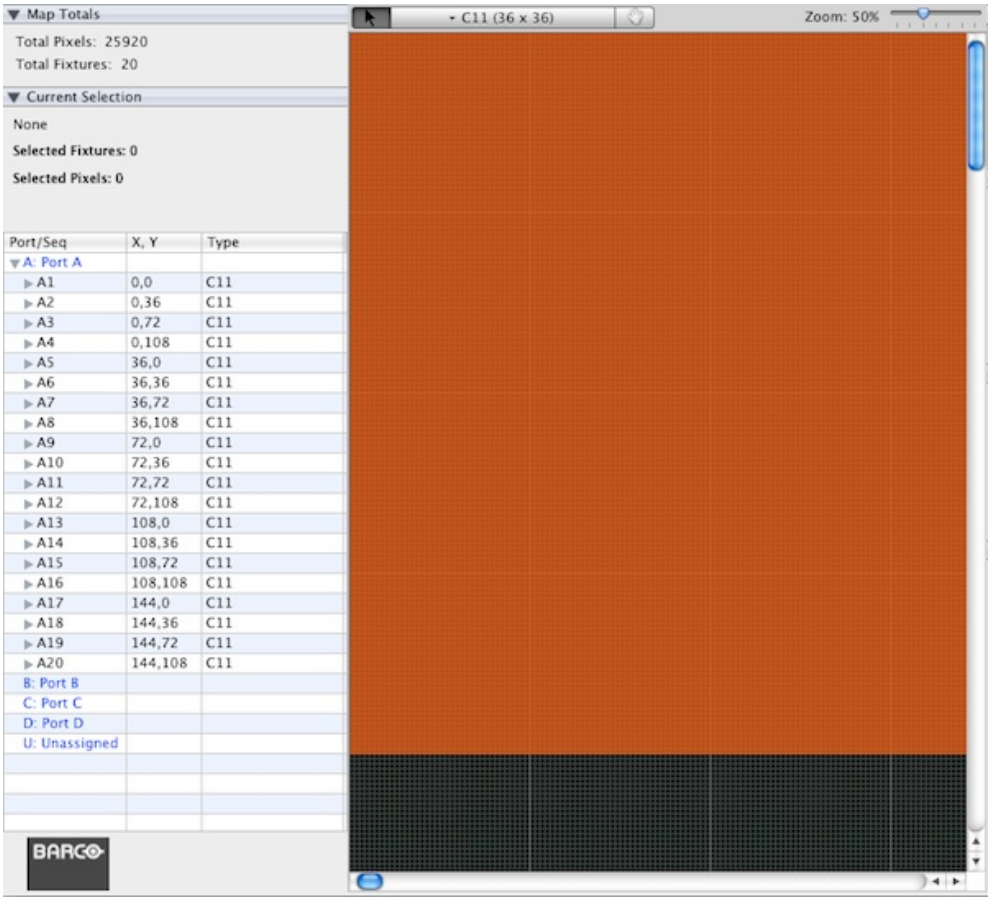



### See also

6.3.1 Menu Bar
6.3.3 Map Editing
6.3.4 Inspectors

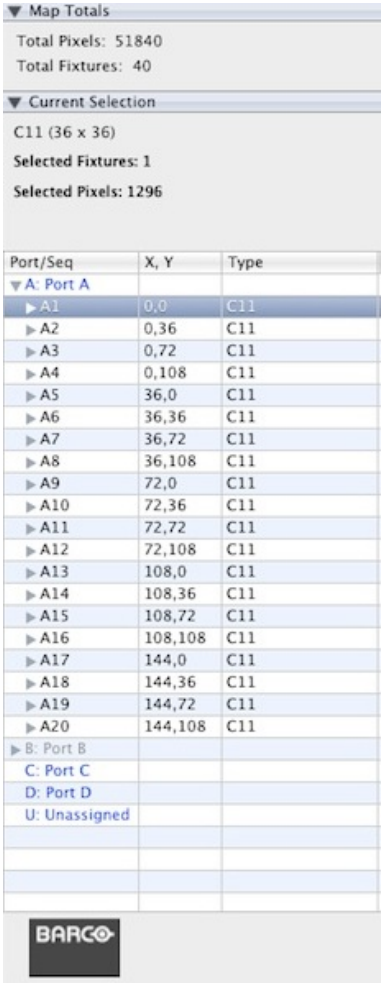
# 6.3.3 Map Editing

The map editing section shows information about fixtures and provides the tools for making changes.




## Map Info Pane

Shows port, sequence, XY coordinates and fixture type information for all fixtures in the map.

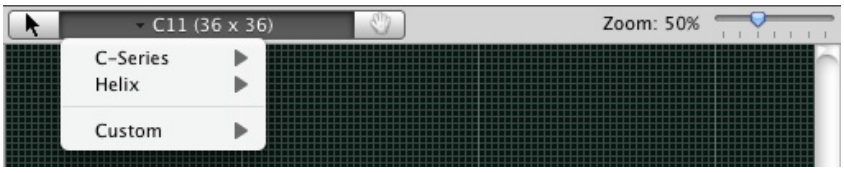



In the image above from the top down:

- Map Totals: Information about the current map
- Current Selection: Information about the selected fixture(s)
- The currently selected fixture is highlighted in the sequence list.
- Fixtures on hidden ports are displayed in gray. In the example above Port B is 'grayed out'.

**Note:** Click on any fixture to highlight it both in the list and in the map view. Click the triangle to the left of a port or fixture to show or hide details. Navigate the list quickly with keyboard arrow keys. Up/down to move through the list right/left to reveal / hide details.

# Map Editing Tools




- Selection Cursor
- Fixture select drop down menu
- Move map hand tool
- Map zoom level selection

## See also

6.3.1 Menu Bar
6.3.2 Mode Selection
6.3.4 Inspectors

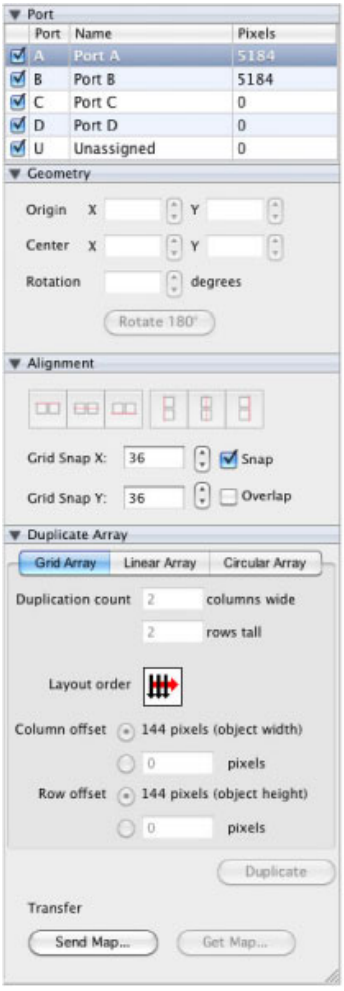
# 6.3.4 Inspectors

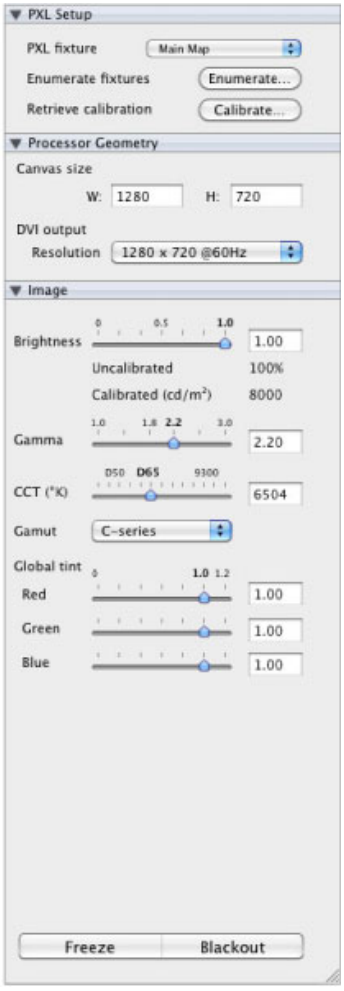
The Inspector panes provide detailed information about either Mapping or Setup

## Mapping and Setup Inspectors

Mapping Inspectors

Setup Inspectors



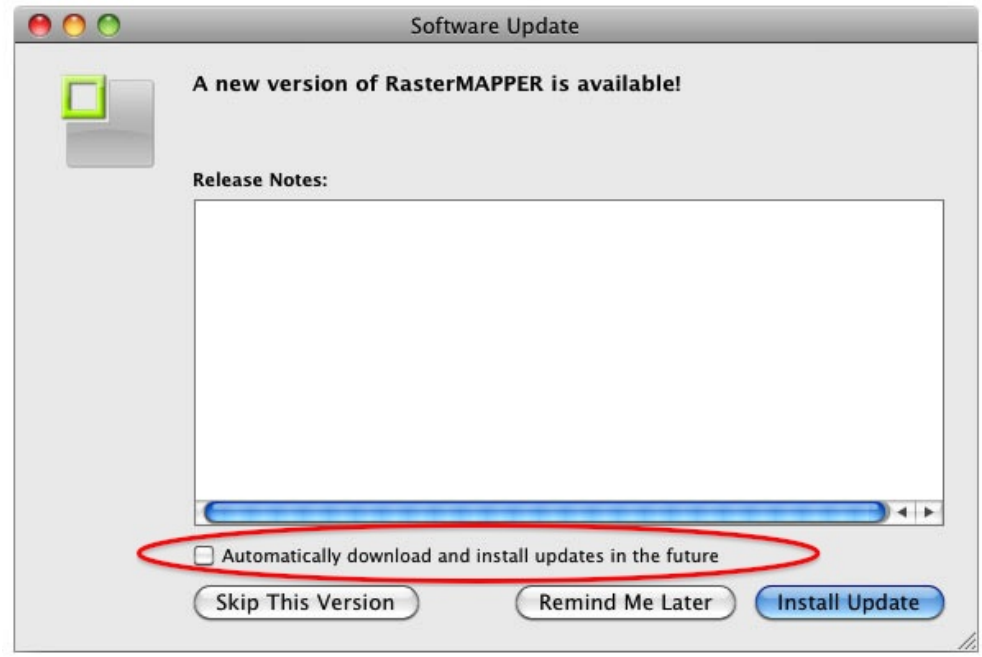

## See also

6.3.1 Menu Bar
6.3.2 Mode Selection
6.3.3 Map Editing

# 6.4 Software Updates

Check manually for software updates with the ***Check for Updates...*** function

RasterMAPPER Version 4.0 includes automatic software upgrade functionality. If a new version is available, it can be downloaded and installed automatically.




## See also

6.1 RasterMAPPER QuickStart
6.2 Basic Workflow
6.3 UI Overview
6.5 Mapping
6.6 Processor Control
6.7 RasterMAPPER Notes

# 6.5 Mapping

Mapping involves choosing existing fixtures or creating new ones and placing them on the work grid in the same order as they are cabled in the system.

The processing equipment may contain multiple output ports for fixtures. Always be aware of which port fixtures are being assigned to. Additional functionality allows the changing of the wiring order of the fixtures in the map by re-sequencing.

With RasterMAPPER Version 4.0 and above multiple maps can be open at the same time. Each can be saved or opened independently of each other and fixtures can be copied between maps.

## See also

6.1 RasterMAPPER QuickStart
6.2 Basic Workflow
6.3 UI Overview
6.4 Software Updates
6.6 Processor Control
6.7 RasterMAPPER Notes

# 6.5.1 Canvas

The work grid or canvas in RasterMAPPER is where you place fixtures. When you first launch RasterMAPPER, a blank canvas is displayed. Once you begin placing fixtures, they appear in a unique color. Fixtures on an inactive port are slightly transparent.

Below are descriptions of the tools specific to the canvas.

## Select Tool

The select tool highlights any fixture or group of fixtures on an active port.

Fixtures can be selected by:

- Starting in an empty section of the grid, click and drag across the canvas.
- Click on the first fixture, then press and hold Shift (Win or Mac) or Command (Mac) or Control (Win) and click on the next fixture. Only those two fixtures will be selected.

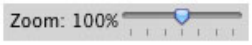
## Hand Tool

The hand tool moves the canvas.

**Note:** Scroll bars can also be used to move the canvas.

## Zoom

Adjust the zoom slider to increase or decrease the viewable canvas in preset values from 8-800%.




Zoom can also be adjusted by:

- Zoom In/Zoom Out from the view menu
- Command +/- (Mac)
- Control +/- (Win)

## Add fixture tool

To place the default C11 fixture, click the the add tool button so that it is highlighted. A yellow add cursor will be displayed when mousing over the map area.

## Fixture select Menu

To select another type of fixture click and hold the triangle next to the fixture name to display the 'Fixture Select Menu'. Mouse over the desired fixture and

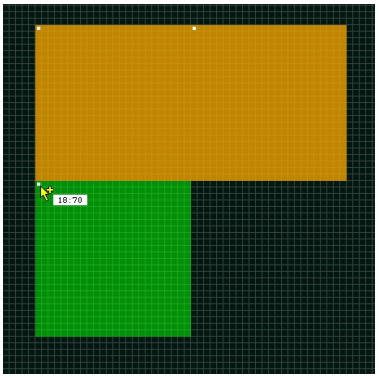
release to select a fixture.

# Building the Map

Click the map grid area to add the fixture to the map. Fixtures will be added to the selected port.

Add fixtures to the canvas in the order they are wired (sequence). The sequence can be changed later, if desired (see Sequencing, p. 21 for more information).

When placing fixtures, the x and y location is displayed adjacent to the cursor. The white square at the top left of each fixture aids in determining the fixture's Z rotation.

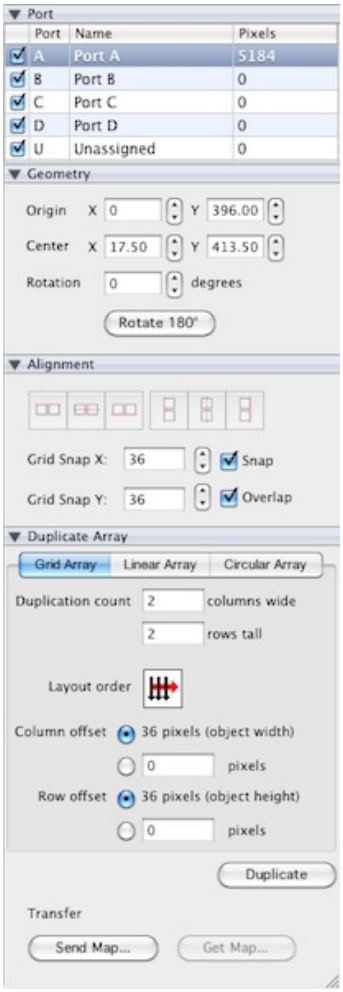



## See also

6.5.2 Mapping Inspectors
6.5.3 Sequencing
6.5.4 Map Save/Open
6.5.5 Advanced Fixture Options

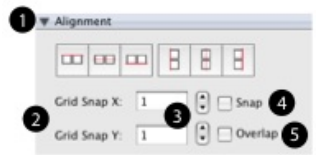
# 6.5.2 Mapping Inspectors

The Mapping pane's inspectors are a collection of tools to help with map editing.




## Alignment Pane

Use the buttons as the top of the alignment pane to align objects either Vertically or Horizontally. Select the fixtures or groups to be aligned and then press the button for the type of alignment desired.

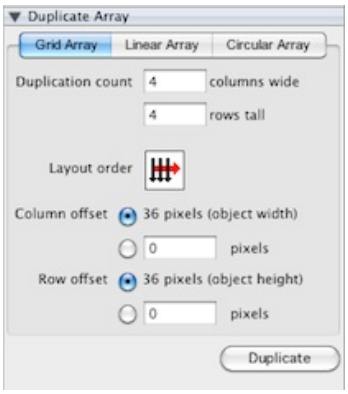



The alignment pane also contains tools to set x and y snap values and enable/disable grid snap and overlay. Snapping limits the placement of fixtures to within only a certain number of pixels, commonly the width/height of the fixture. Overlap allows fixtures to be placed on top of or behind another fixture.

### Duplicate Array

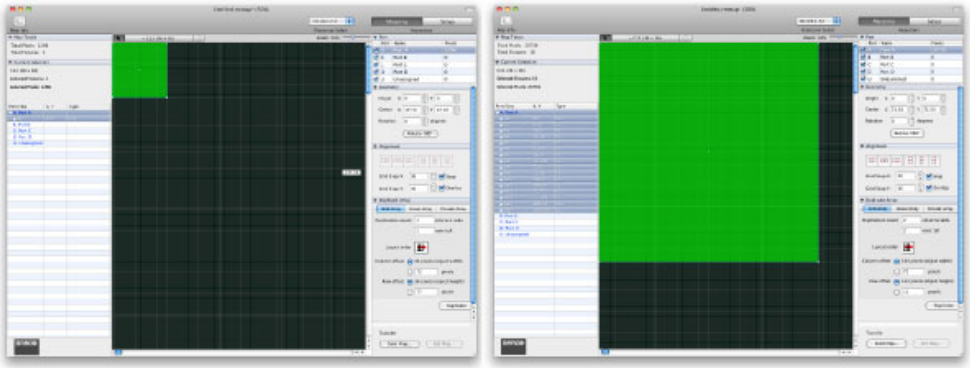
The *Duplicate Array* inspector of the Layout tab displays the options for three Array Duplication modes.

## Grid Array

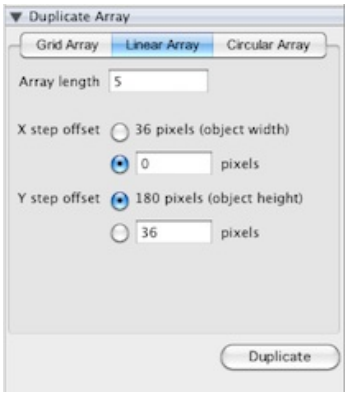



1. Enter the number of rows and columns the resulting array will be.
2. Choose the new scan order for the resulting array.
3. Enter the desired column and row offset between each duplicated array.

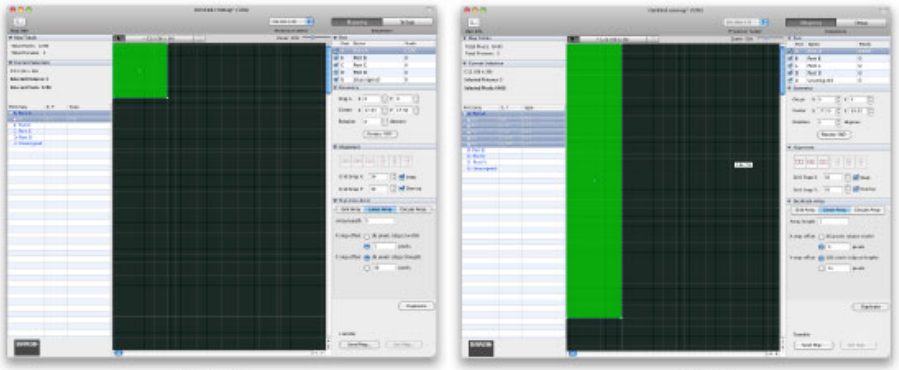
RasterMAPPER automatically sets the offsets based on the width and height of the selected fixtures (objects), but you can enter your own, if desired.



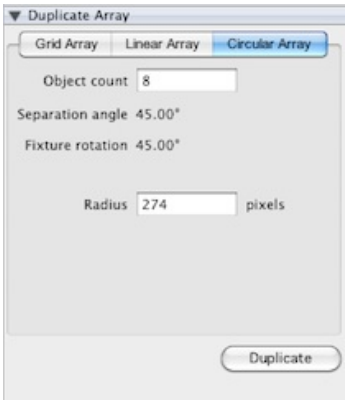

## Linear Array



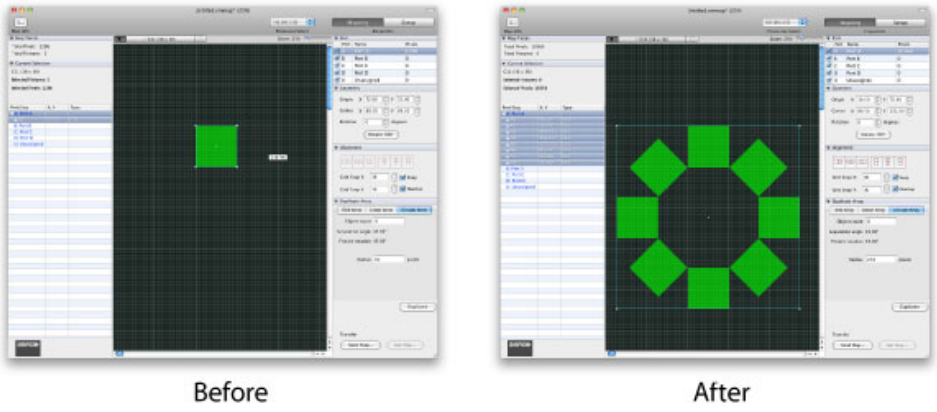

- Enter the total number of fixtures for the resulting array.
- Enter the X (horizontal) and/or Y (vertical) offsets for the resulting array. Each new fixture will be this number of pixels away from each other. RasterMAPPER automatically sets the offsets based on the width and height of the selected fixtures (objects), but you can enter your own, if desired.




## Circular Array

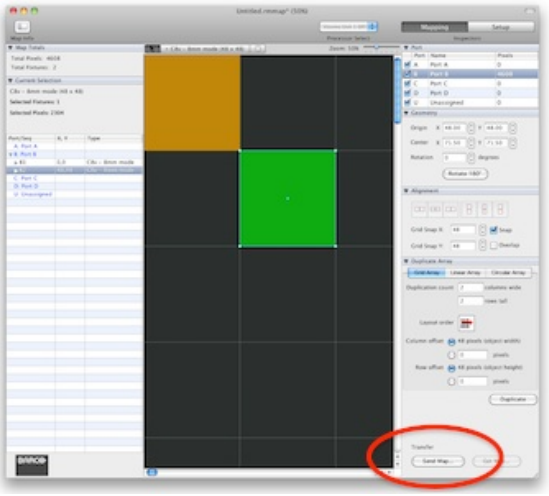



- Enter the total number of fixtures for the new array.
- Based on the count, the Separation angle and Fixture rotation will be automatically computed.
- Enter the desired Radius (in pixels) for the new array.



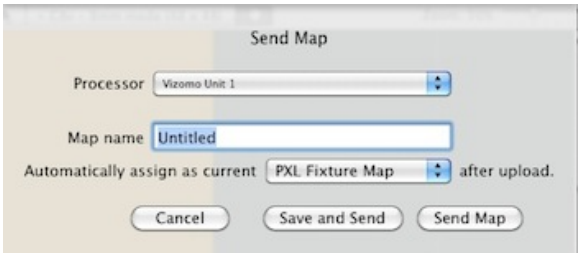

# Map Transfers

The Transfer section below the inspectors contains buttons for sending maps and getting (in the future) maps from the processor. Click the **Send Map...** button at the bottom of the **Mapping** inspector to open the **Send Map** window.



## Send map window

Name the map here and press ***Send Map*** to transfer the map to the Vizomo. Maps are sent to the processor selected in the Processor Select menu.

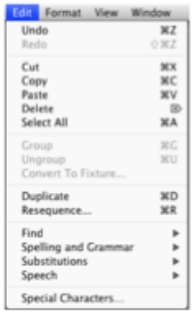



## See also

6.5.1 Canvas
6.5.3 Sequencing
6.5.4 Map Save/Open
6.5.5 Advanced Fixture Options

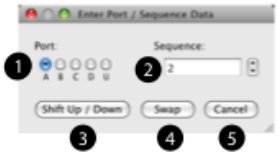
# 6.5.3 Sequencing

The wiring order or sequence determines the order of the pixels output from the processor. Individual fixtures are assigned an address as they are added to the grid but the sequence may be changed afterwards.




Select the fixture(s) you wish to resequence and choose ***Resequence...*** from the Edit menu or press **`Command + R`** (Mac), **`Control + R`** (Win). The current sequence number is displayed.

Options for resequencing include:



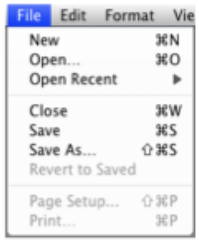

1. New port to which the selected fixtures will be moved.
2. New sequence number to start the resequencing. The current sequence number is displayed.
3. Press **SHIFT UP / DOWN** to have the newly sequenced fixture "inserted" into its new sequence location. All of the other fixtures between the two locations are shifted up or down accordingly.
4. Press **SWAP** to have the selected fixture(s) sequence number exchanged with fixture(s) that already had that port/sequence information.
5. Press **CANCEL** to close the window without resequencing.

## See also

6.5.1 Canvas
6.5.2 Mapping Inspectors
6.5.4 Map Save/Open
6.5.5 Advanced Fixture Options

# 6.5.4 Map Save/Open

RasterMAPPER launches with a new, empty map. You can open existing maps and save the current map by using the ***File*** menu.




NOTE:

Don’t forget that in RasterMAPPER v4.0  and later you can have multiple maps open at the same time. This allows you enhanced functionality like copying and pasting fixtures from one map to another.

## See also

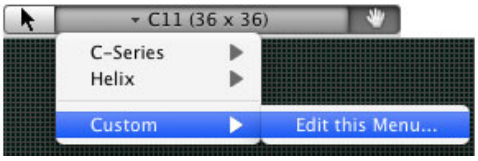
6.5.1 Canvas
6.5.2 Mapping Inspectors
6.5.3 Sequencing
6.5.5 Advanced Fixture Options

# 6.5.5 Advanced Fixture Options

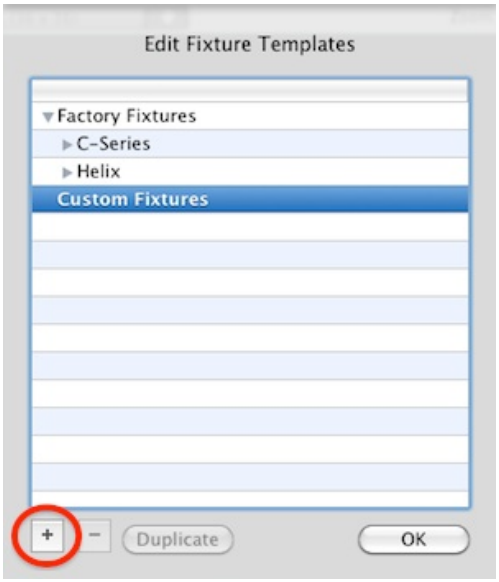
## Creating Custom Fixtures

RasterMAPPER provides a default list of PXL fixtures to use. You can also create new fixtures that can be saved with the current map or as a template fixture to be used with any map. If a custom fixture is created in a map and opened on another computer without that custom fixture, it will be automatically added to the current map.

Select **Edit this Menu...** from the fixture menu to add or remove custom fixtures from the menu.



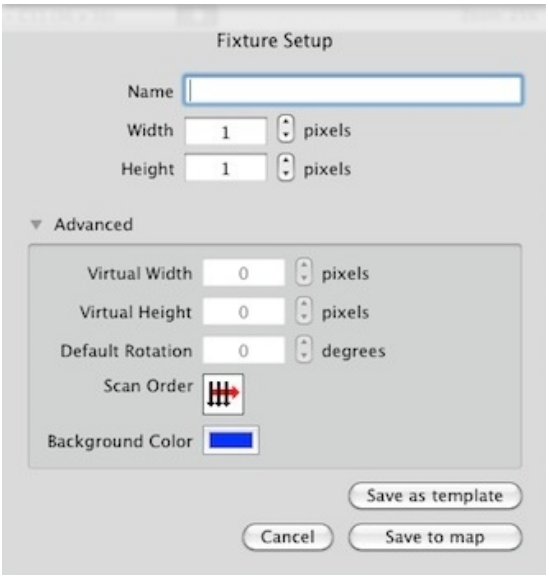

Then press the **+** button at the bottom.




**Note:** Editing existing fixtures is not yet supported.

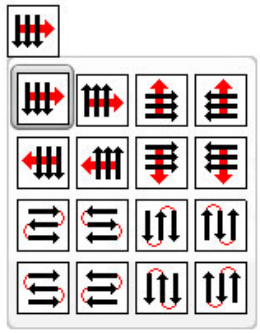
### Fixture Setup Window

Provide the name, pixel dimensions, scan order and desired fixture color. Then, select save to template or map.




### Scan Order

Click the Scan Order icon to select a scan order for the new fixture.



### Save to Map

Saves the custom fixture to the current map. This fixture will not be loaded the next time RasterMAPPER is launched. However, if a map with a custom fixture is loaded, it will be placed in the Custom section of the fixture menu.

### Save to Template

Template fixtures load whenever RasterMAPPER is launched and are saved to the following locations:

- Win: “Documents and Settings\user\Application Data\RasterMAPPER\Templates\” (ensure “Show hidden files and folders” is enabled)
- Mac: “~/Library/Application Support/RasterMAPPER/templates/”

## Moving Fixtures

### X/Y Coordinate movement

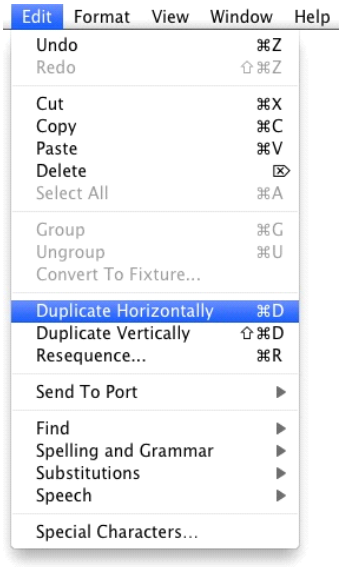
- Mouse: click on a fixture and drag it to a new location. If Overlap is turned off, you will not be able to place one fixture over another (see Alignment Pane)
- Keyboard: press the desired arrow key to move the selected fixture(s) in any direction on the canvas.
- Geometry Pane: enter explicit x-axis and y-axis values for the fixture(s). (See Geometry Pane)

### Z Rotation

- Mouse: position the cursor over one of the corners of the box surrounding the selection and click and drag to rotate the selected fixture(s). The cursor changes to indicate the possible direction of rotation.
- Geometry Pane: enter an explicit rotation value for the fixture(s). (See Geometry Pane)

# Duplicating Fixtures

Fixtures can be duplicated both Horizontally and Vertically.




1. Choose ***Duplicate Horizontally*** from the Edit menu, or press Command + D(Mac), Control + D (Win) to place a copy of the fixture(s) on the canvas to the right of the selected fixture(s). If there is no space in the default location the duplicated fixture(s) will be placed in the next available area.

2. Choose ***Duplicate Vertically*** from the Edit menu, or press Shift + Command + D (Mac), Shift + Control + D (Win) to place a copy of the fixture(s) on the canvas to the bottom of the selected fixture(s). If there is no space in the default location the duplicated fixture(s) will be placed in the next available area.

**Note:** Press and hold the Option key to duplicate drag a copy of the fixture(s) to a new location.

## See also

6.5.1 Canvas
6.5.2 Mapping Inspectors
6.5.3 Sequencing
6.5.4 Map Save/Open

# 6.6 Processor Control

RasterMAPPER provides control over many functions on the Vizomo processor via the Configure Inspectors. Some parameters are sent instantly to the processor resulting in an immediate change. Other parameters are not sent until you expressly push a button or otherwise commit the changes.

For more information on the Vizomo processor, please refer to the Vizomo User Guide.

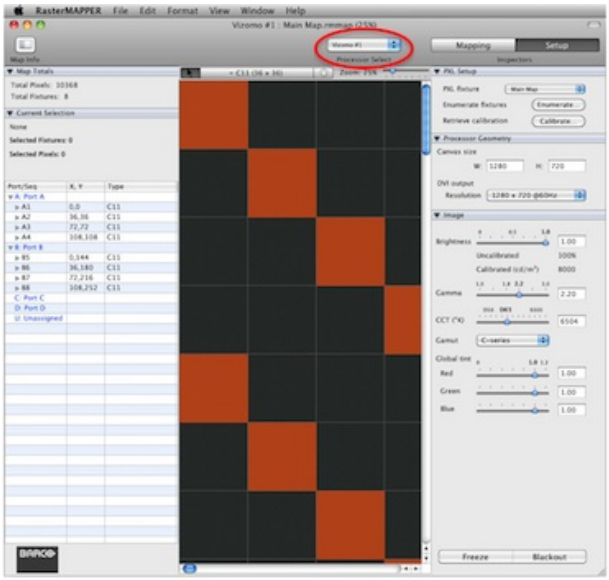
## See also

6.1 RasterMAPPER QuickStart
6.2 Basic Workflow
6.3 UI Overview
6.4 Software Updates
6.5 Mapping
6.7 RasterMAPPER Notes

# 6.6.1 Processor List

RasterMAPPER provides the functionality to control different processors from the same interface. A processor select drop-down menu is presented at the top of the main program window and also displayed, when saving a map.

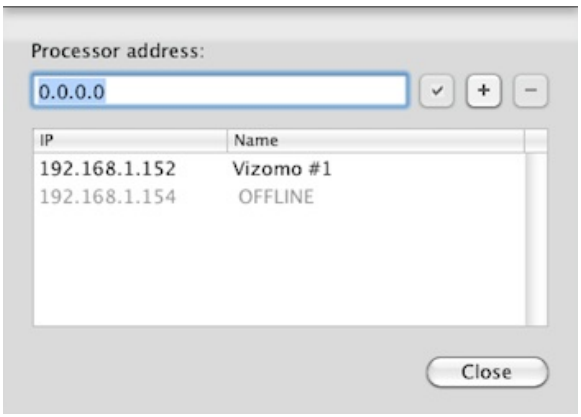
## Main Processor Select



# Edit Processor List

To manually add a processor, select ***Edit Menu...*** to open the Processor List window

A list of both automatically discovered and manually added processors will be displayed.




## Add Processor

Type the IP address of a remote processor and press the **+** button to add a processor to the list. If a connection can not be established RasterMAPPER will

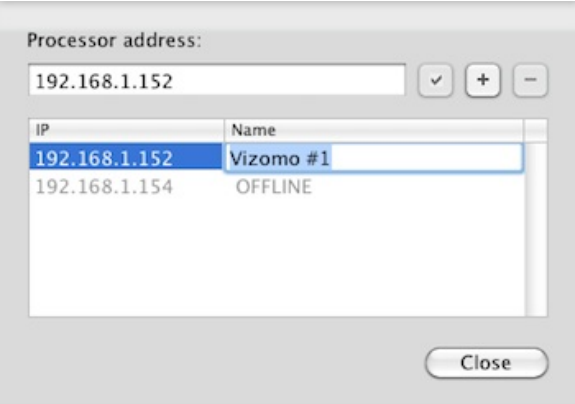
indicate *OFFLINE*.

## Remove Processor

Highlight the processor to be removed and press the button with the **-** symbol

## Rename a Processor

Edit a processor name by double clicking the name, click on the list when done.




## See also

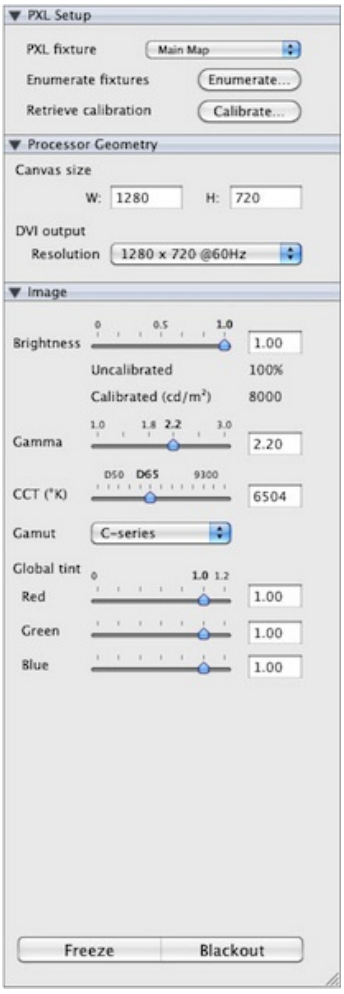
6.6.2 Setup Inspectors

# 6.6.2 Setup Inspectors

## Overview

The inspectors in the Setup pane provide access to Vizomo processor functions. Most sections of the pane contain a triangle to the left of the section name allowing you to close or open that section. This gives you the flexibility to hide seldom used sections while ensuring frequently used ones remain visible. Additionally, if the screen size does not accommodate all the inspectors, scrollbars will appear. The top and bottom sections are always visible and will not scroll out of view.

The sections of the Setup pane are:




[Maps]

[PXL Setup]

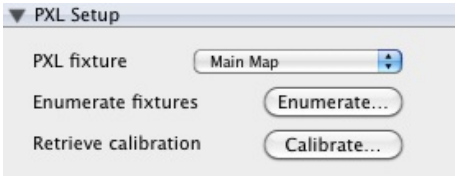
[Processor Geometry]

[Image Controls]

[Output]

## PXL Setup

Select the active map on the processor




Opens the Enumerate window.

See: 6.4.1 Enumeration for details

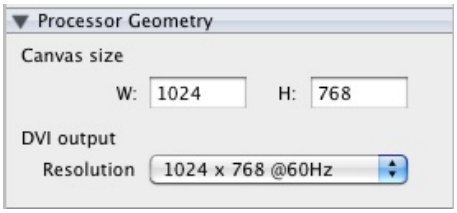
Opens the Retrieve Calibration window.

See: 6.4.2 Calibration for details

Disables the status indicator LEDs on the rear of the C-series tiles

# Processor Geometry

The Processor Geometry inspector pane:

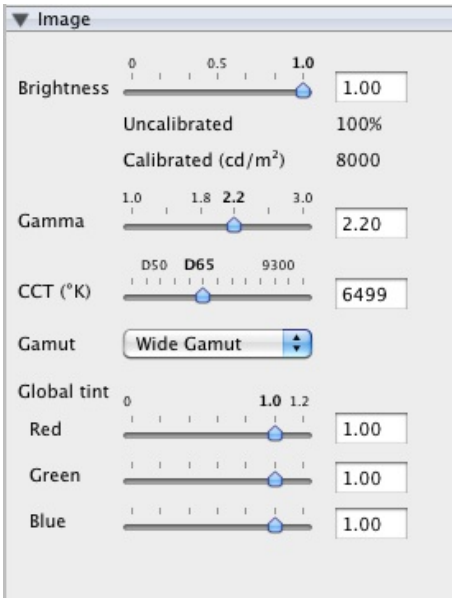



Specify the width and height of the Vizomo canvas.

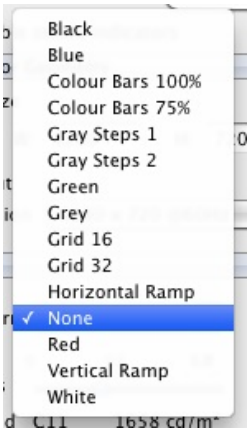
Choose the DVI output resolution and orientation.

# Image Controls

The Image inspector pane:




*Test pattern* - Select from among 14 patterns. Choose ***None*** to disable.



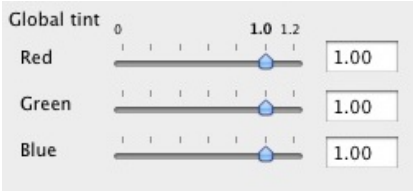

*Brightness* - Range is 0-1 defaults to 1

*Gamma* - Range is 1.0 to 3.0 defaults to 2.2

*CCT* - Range is 4000K to 10,000K defaults to 6,500K

*Gamut* - Selections are; Adobe 1998, Cobra Extended, HDTV Rec 709, NTSC, PAL, Wide Gamut. Default is Cobra Extended.

*Global tint* - Ranges are 0 to 1.2 defaults to 1.0




# Freeze and Blackout

**Freeze** the current image on-screen while allowing playback and other functions to continue in the background.

**Blackout** displays video black on the PXL output, all playback and other functions continue as normal in the background.

## See also

6.6.1 Processor List

# 6.7 RasterMAPPER Notes

## Typographic Information

This User's Guide uses the following typographic conventions:

- menu items are displayed in ***Bold Italics***
- clickable buttons are displayed in **Bold Title Case**.
- on-screen text is displayed in *italics*
- filenames & application names are displayed between "quote marks"
- keyboard keystrokes are displayed in **`Courier Font`**

## System Requirements

RasterMAPPER software requires the following:

- Microsoft Windows® XP or
- Mac OS X v10.5+, Intel Processor (PowerPC not supported) with
- 1024 x 768 display (or larger), • 10 MB of disk space minimum • an ethernet port (to connect to a Vizomo processor)

## Download/Install Info

Follow the steps below to install and run RasterMAPPER.

### Windows

1. Download RasterMAPPER software for Windows from the cled.barcousa.com website
2. Extract/un-zip the files to the same folder.
3. Double-click the file named **RasterMAPPER.exe.**
4. Note: If RasterMAPPER fails to launch, you need to download and install Microsoft Visual C++ 2005 SP1 Redistributable Package (x86) available free from the following link: http://www.microsoft.com/downloads/ details.aspx?familyid=200B2FD9-AE1A-4A14-984D-389C36F85647&displaylang=en

### Macintosh

1. Download RasterMAPPER software for Mac OS X from the cled.barcousa.com website.
2. Extract/un-zip the files to the same folder.
3. Double-click the file named **RasterMAPPER.**

---

NOTE:

The downloaded files must all be extracted to the same folder to run properly.

---

## See also

6.1 RasterMAPPER QuickStart
6.2 Basic Workflow
6.3 UI Overview
6.4 Software Updates
6.5 Mapping
6.6 Processor Control

# 7. PXL System Online Help Notes

## C-series Online Help System

Copyright © 2010 Barco, Inc.

The Barco logo, Cobra®, Helix™, Vizomo™, RasterMAPPER™ and Versa® are trademarks of Barco, Inc.
Other trademarks and trade names may be used in this document to refer to products by other entities. Barco, Inc. claims no proprietary interest in trademarks and trade names owned by others.
Information and specifications in this document are subject to change without notice. Barco, Inc. assumes no responsibility or liability for any errors or inaccuracies that may appear in this manual.

## Safety Information

The symbols below are used throughout this manual to identify important safety information.
Heed all warnings and safety information.

| Symbol | Meaning |
|---|---|
| | **Warning, Danger, or Caution**<br>Risk of injury to yourself or the product. |
| | **Risk of Electrical Shock**<br>Risk of severe electrical shock. |

Risk of electrical Shock. No user-serviceable parts inside. Observe all applicable electrical codes. The power outlet shall be installed near the equipment and shall be easily accessible.

## Warranty Information

Barco, Inc. warrants C-series, Helix, and Vizomo hardware products against defects in materials and workmanship under normal use for a period of one (1) year from the date of retail purchase by the original end-user purchaser.

Barco, Inc. does not warrant that the operation of any product will be uninterrupted or error free. Barco Inc. is not responsible for damage arising from failure to follow instructions relating to the product's use.

## Federal Communications Commission (FCC Statement)

C-series and Helix have been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Changes

Barco provides this manual 'as is' without warranty of any kind, either expressed or implied, including but not limited to the implied warranties or merchantability and fitness for a particular purpose. Barco may make improvements and/or changes to the product(s) and/or the program(s) described in this publication at any time without notice.

This publication could contain technical inaccuracies or typographical errors. Changes are periodically made to the information in this publication; these changes are incorporated in new editions of this publication.

### See also

Online Help System
2. C-series Tile Manual
3. Helix P1 Manual
4. Vizomo User Guide

5. PDB-5 Manual
6. RasterMAPPER User Guide
Site Index

# Site Index


- Online Help System
- 2. C-series Tile Manual
  - 2.1 Safety & Installation Guidlines
  - 2.2 System Overview
    - 2.2.1 Basic System Info
    - 2.2.2 C-series Tile Overview
  - 2.3 Power & Data Distribution
    - 2.3.1 Power & Data Overview
    - 2.3.2 Power Input
    - 2.3.3 Data Input
    - 2.3.4 Tile Status Indicator
    - 2.3.5 Cables & Connectors
  - 2.4 Assembly & Mounting
    - 2.4.1 Latches
    - 2.4.2 Latch Adjustment
    - 2.4.3 Angle Adjustment Dowels
    - 2.4.4 Center Mount
    - 2.4.5 L-Bracket
  - 2.5 Rigging Hardware & Methods
    - 2.5.1 Stacked C-series Tiles
      - 2.5.1.1 Feet
      - 2.5.1.2 Vertical Braces
      - 2.5.1.3 Assembly of Stacked Screens
      - 2.5.1.4 Wind Speed Charts
    - 2.5.2 Light Duty Hanging
      - 2.5.2.1 Light Duty Header Detail
      - 2.5.2.2 Light Duty Header Operation
      - 2.5.2.3 Adjusting the Hooks on a Light Duty Header
      - 2.5.2.4 Light Duty Hanging Options
      - 2.5.2.5 Example: Multiple Light Duty Headers
      - 2.5.2.6 Load Charts: Multiple Light Duty Headers
        - Left = 1x, Right = 1x
        - Left = 1x, Right = 2x
        - Left = 1x, Right = 3x
        - Left = 1x, Right = 4x
        - Left = 2x, Right = 1x
        - Left = 2x, Right = 2x
        - Left = 2x, Right = 3x
        - Left = 2x, Right = 4x
        - Left = 3x, Right = 1x
        - Left = 3x, Right = 2x
        - Left = 3x, Right = 3x
        - Left = 3x, Right = 4x
        - Left = 4x, Right = 1x
        - Left = 4x, Right = 2x
        - Left = 4x, Right = 3x
        - Left = 4x, Right = 4x

2.5.2.7 Cantilever Hanging
2.5.2.8 Light Duty Header Wind Speed Charts
2.5.3 Heavy Duty Hanging
2.5.3.1 Heavy Duty Header Detail
2.5.3.2 Heavy Duty Header Operation
2.5.3.3 Load Charts: Heavy Duty Headers
Heavy Duty Header Load Chart - 2 Pickup Points
Heavy Duty Header Load Chart - 3 Pickup Points
Heavy Duty Header Load Chart - 4 Pickup Points
Heavy Duty Header Load Chart - 5 Pickup Points
Heavy Duty Header Load Chart - 6 Pickup Points
2.6 C-series Tile Appendices
Appendix A: Beaufort Scale
3. Helix P1 Manual
3.1 Safety & Installation Guidelines
3.2 Helix System Overview
3.2.1 Basic System Info
3.2.2 Helix P1 Pixel String Overview
3.2.3 PXL Node Box Overview
3.3 Power & Data Distribution
3.3.1 Power & Data Overivew
3.3.2 Power Input
3.3.3 PXL Node Status Indicator
3.3.4 PXL Cable & Connectors
3.3.5 Pixel Extension Cables
3.4 Helix P1 Assembly & Mounting
4. Vizomo User Guide
4.1 Vizomo Quick Start
4.1.1 Installing Vizomo Controller
4.1.2 Connecting to a Processor
4.1.3 Upgrading Vizomo
4.1.4 Mapping
4.2 General Overview
4.2.1 Key Features
4.2.2 Safety Information
4.2.3 Hardware Overview
4.2.4 Power Up
4.3 Configuration
4.3.1 Vizomo Controller
4.3.1.1 Installation
4.3.1.2 Operation
4.3.1.3 Navigation Bar
4.3.2 System Settings
4.4 Operation
4.4.1 Blueprint Chooser
4.4.2 DVI Capture
4.4.3 Video Mixer
4.5 Vizomo Appendices
Appendix A: Specifications
Appendix B: Video File Encoding
5. PDB-5 Manual
5.1 Safety & Installation Guidelines

- 5.2 System Overview
  - 5.2.1 Basic System Info
  - 5.2.2 PDB-5 Overview
  - 5.2.3 Status Indicators
- 5.3 Operation
  - 5.3.1 General Operation
  - 5.3.2 Power Input & Output
  - 5.3.3 Data Input
- 6. RasterMAPPER User Guide
- 6.1 RasterMAPPER QuickStart
  - 6.1.1 Enumeration
  - 6.1.2 Calibration
- 6.2 Basic Workflow
- 6.3 UI Overview
  - 6.3.1 Menu Bar
  - 6.3.2 Mode Selection
  - 6.3.3 Map Editing
  - 6.3.4 Inspectors
- 6.4 Software Updates
- 6.5 Mapping
  - 6.5.1 Canvas
  - 6.5.2 Mapping Inspectors
  - 6.5.3 Sequencing
  - 6.5.4 Map Save/Open
  - 6.5.5 Advanced Fixture Options
- 6.6 Processor Control
  - 6.6.1 Processor List
  - 6.6.2 Setup Inspectors
- 6.7 RasterMAPPER Notes
- 7. PXL System Online Help Notes
- Site Index


## See also


Online Help System
2. C-series Tile Manual
3. Helix P1 Manual
4. Vizomo User Guide
5. PDB-5 Manual
6. RasterMAPPER User Guide
7. PXL System Online Help Notes

# Index

## R

Release Notes 1

## S

Safety 4

BARCO
Visibly yours